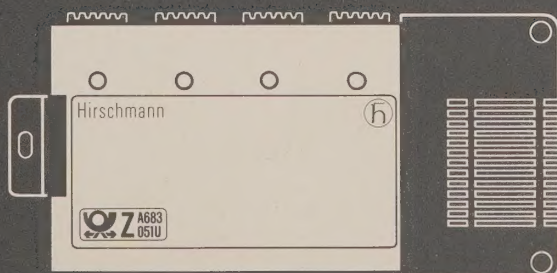
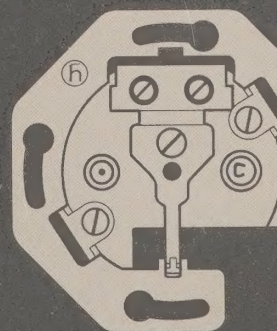
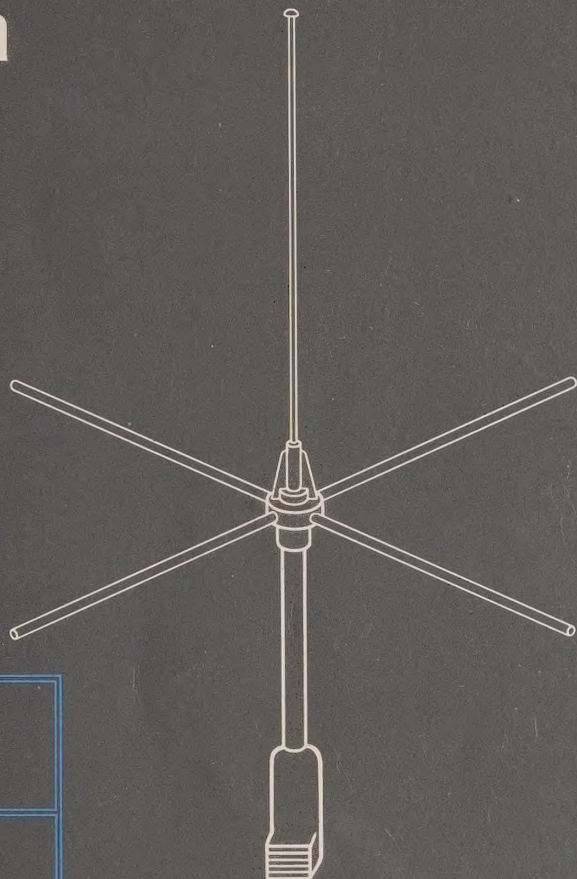
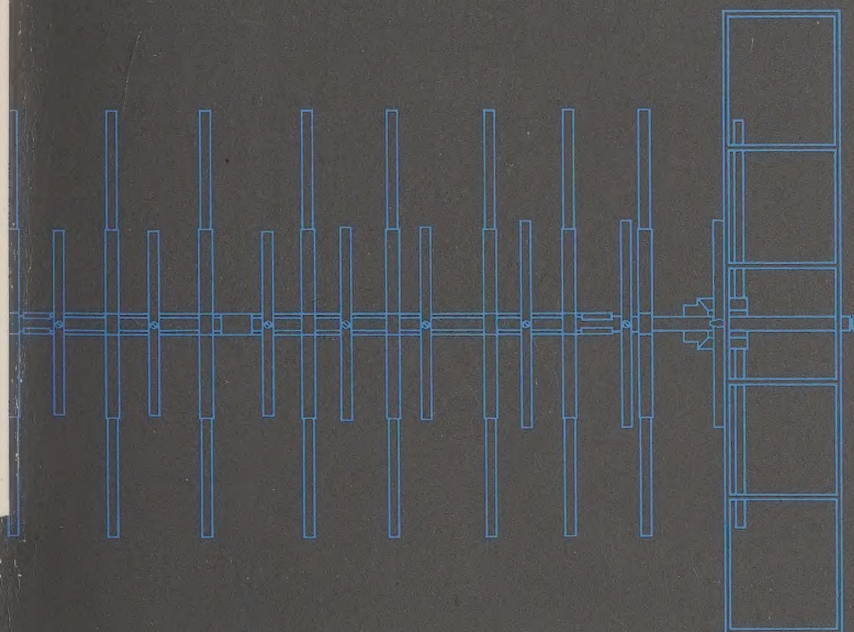
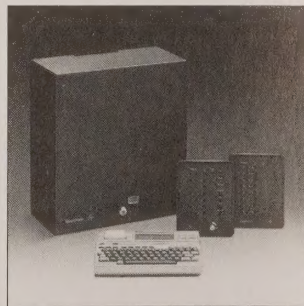
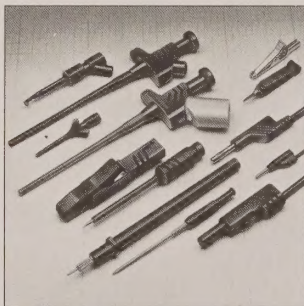
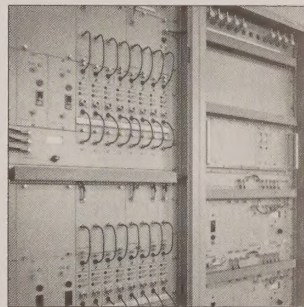
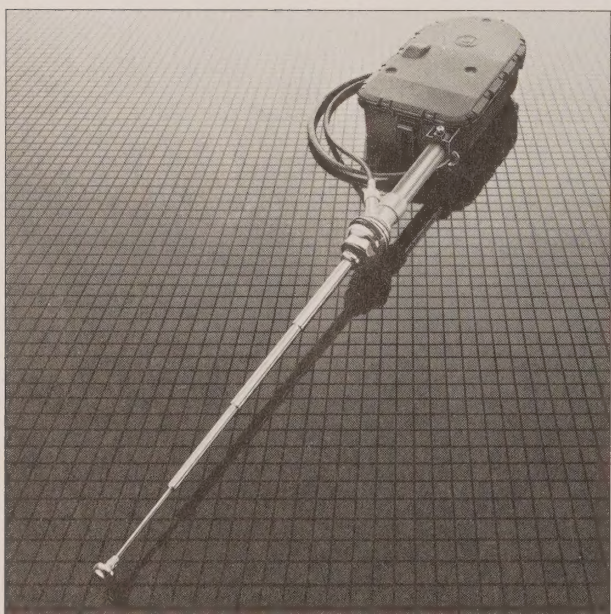
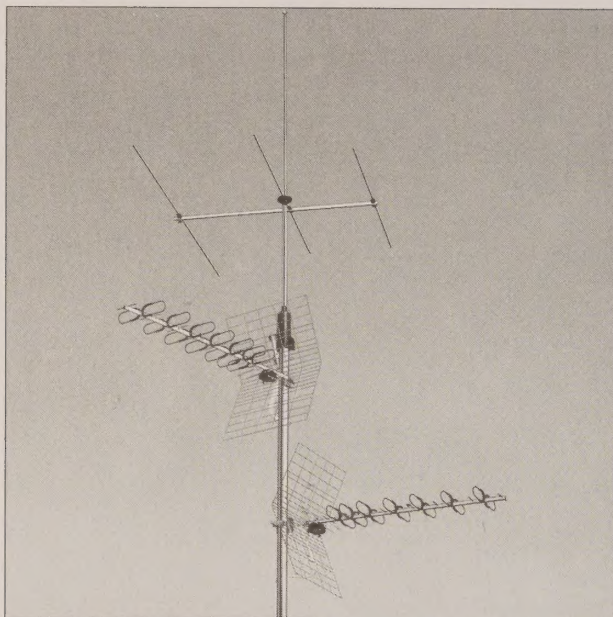


Hirschmann

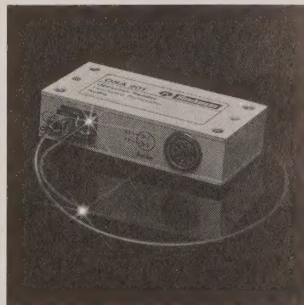
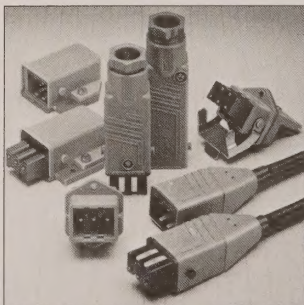


Television Antennas
Radio Antennas
Community Antenna
Systems
Catalogue DS 2 E





- ☐ Automobile Antennas and Communication Antennas
- ☐ Radio and TV Antennas, Community Antenna Systems
- ☐ Satellite Receiving Systems
- ☐ One- and Multipole-Connectors, Laboratory Equipment
- ☐ Systems and Components for Opto-electronic Communication



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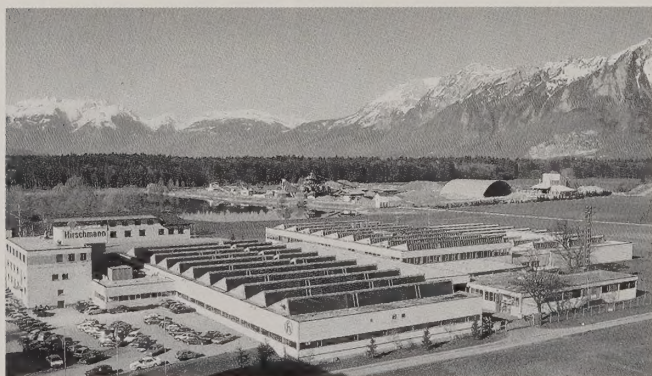
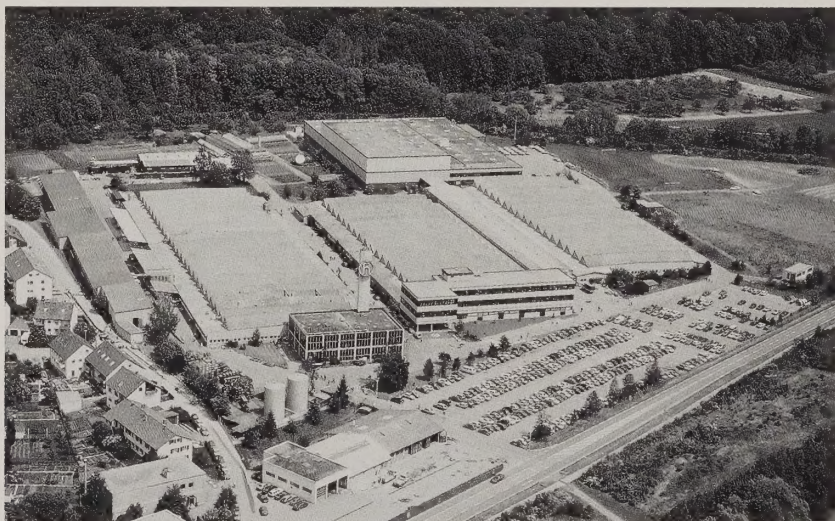
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Measuring Equipment

Technical Appendix 102-111

Important Features of Hirschmann Antennas

- ☐ All Hirschmann Antennas are developed and constructed for highest performance.
- ☐ All types of television antennas are for excellent black/white and colour reception.
- ☐ Radio antennas for AM/FM mono and stereo reception.
- ☐ High mechanical stability
- ☐ Quick and easy installation
- ☐ Weatherproof cable connection.
- ☐ Cable connecting box with incorporated matching element for either 75 Ohm coaxial or symmetrical cable connection.
- ☐ Tried and tested under all climatic conditions. Most suitable for tropical areas.
- ☐ Complete range of mounting accessories available.
- ☐ Continuity of research and engineering guarantees up to date standard.

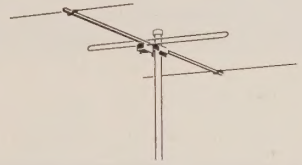
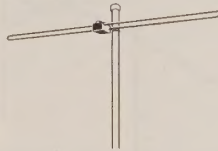
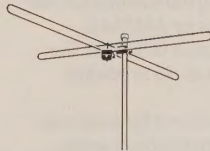


**FM-antennas for
directional and omni-
directional reception**

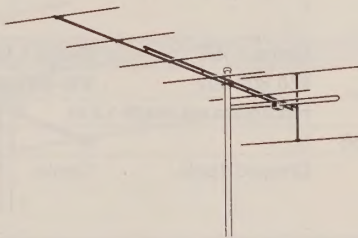
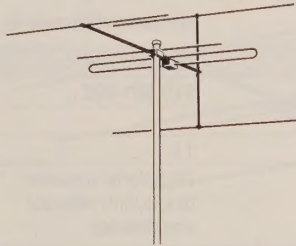
☐ For the reception of FM-
signals in the frequency range
of 87.5 MHz–108 MHz

☐ Coaxial or symmetrical
connection.
☐ Fixing brackets for masts up to
60 mm diameter

(U1-antennas for masts up
to 54 mm only).
☐ Antenna elements
pre-assembled

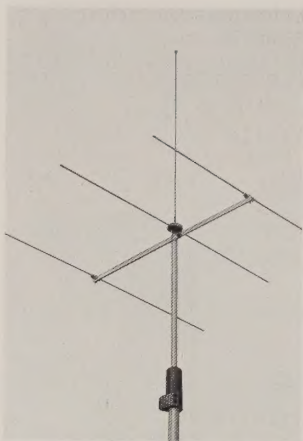


Type	U 4	U 1	U 3
Ordering code	910 664-001	912 511-000	912 515-002
Description	Crossed dipole FM-antenna for omnidirectional reception	Single dipole (AM-reception by unshielded download possible)	3-elements FM-antenna for directional reception
Gain	dB -3	0	5
Front-to-back-ratio	dB -	-	14
↗ horizontal	360°	78°	67°
↗ vertical	-	-	115°
Mechanical length	m (Dipole length 1.5 m)	1.5	1.1
Windload	N 49	27	51
Weight/piece	kg 0.8	0.7	1.2
Packing dimensios	cm 152 x 13.5 x 11.5	149 x 10.6 x 10.5	148 x 9 x 9



Type	U 5	U 8
Ordering code	910 234-002	910 738-002
Description	5-elements FM-antenna for directional reception	8-elements high gain FM-antenna for directional reception
Gain	dB 7	8-10
Front-to-back-ratio	dB 18	21
↗ horizontal	63°	50°
↗ vertical	92°	60°
Mechanical length	m 1.46	3.5
Reflector area	m 1.79 x 0.8	1.79 x 0.8
Windload	N 102	142
Weight/piece	kg 2.2	4.4
Packing dimensios	cm 186 x 12 x 9	150 x 19.5 x 12.5

Antenna kits for AM- and FM radio reception



- For installation at the top of masts with diameters between 36 and 54 mm
- FM antenna is elevated from base unit
- AM reception by fibre glass rod and all metall parts above base unit
- Matching transformer for AM and coupler for AM/FM is incorporated in base unit. For connection of 75 Ω coaxial cable
- The base unit tightens mast against penetration of water, dust and sand

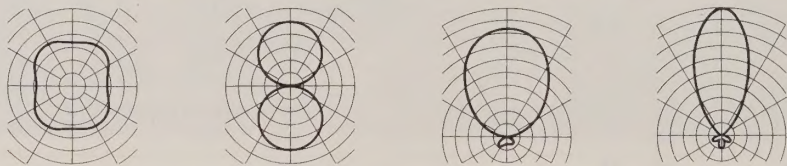
Easy and quick installation

- The FM Dipole elements are pre-assembled to the insulating unit. They are turned into horizontal position and fixed between upper and lower part of insulation unit. When screwing on fibre glass rod upper and lower part of insulation unit are tightened. This completes the assembly



Type		Gema 4 KR	Gema 1 KR	Gema 3 KR	Gema 5 KR
Ordering code		910 802-002	910 800-002	910 801-002	910 803-002
AM reception by		Fibre glass rod length 1.2 m			
Gain for AM	dB	6	6	11	12
FM reception by		Crossed dipole	Dipole	Directional antenna dipole with reflector and director	Directional antenna 5-elements

Pattern for FM reception



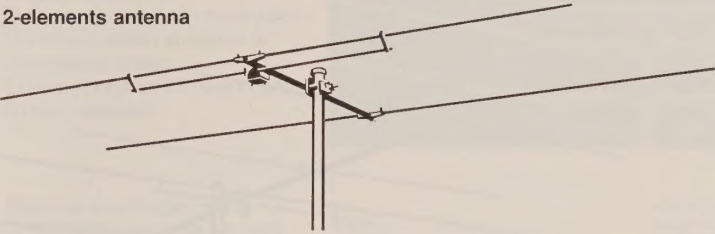
Gain for FM	dB	-3	0	5	7
Front-to-back-ratio	dB	-	-	11-12	16-18
✧ horizontal		360°	78°	67,5°-72°	58,5°-67,5°
✧ vertical		-	-	110°	92°
Length	m	(Dipole length 1,5 m)	(Dipole length 1,5 m)	1,10	1,50
Windload mounted up to 20 m above ground	N	71	57	86	126
higher than 20 m	N	97	78	118	173
Weight/piece	kg	2.0	1.9	2.4	3
Packing dimensions	cm	120 x 13 x 13	120 x 13 x 13	120 x 13 x 13	120 x 16 x 16



Band Antennas
for channel 2-4

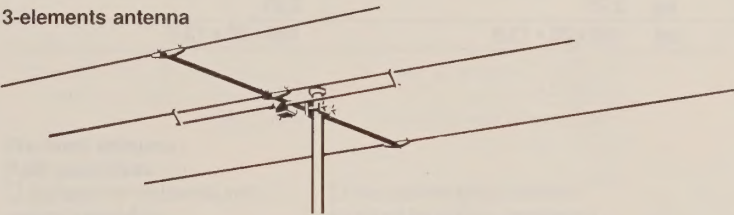
- ☐ Coaxial cable connection
- ☐ Fixing brackets for masts up to 60 mm diameter

2-elements antenna



Type	Fesa 2 Ra/K 2-4	
Ordering code	912 650-234	
Channel	2-4	
Gain	dB	3
Front-to-back-ratio	dB	9
↗ horizontal	75°	
Mechanical length	m	1,09
Windload horizontal	N	82
Windload vertical	N	104
Weight/piece	kg	1,6
Packing dimensions	cm	185 x 17,5 x 11,5

3-elements antenna



Type	Fesa 3 Ra/K 2-4	
Ordering code	912 651-234	
Channel	2-4	
Gain	dB	5
Front-to-back-ratio	dB	12
↗ horizontal	65°	
Mechanical length	m	1,72
Windload horizontal	N	104
Windload vertical	N	140
Weight/piece	kg	2,1
Packing dimensions	cm	185 x 17,5 x 11,5

One Channel Antennas

- ☐ For the reception of one channel in Band I
- ☐ Coaxial cable connection
- ☐ Fixing brackets for masts up to 60 mm diameters

4-elements antennas

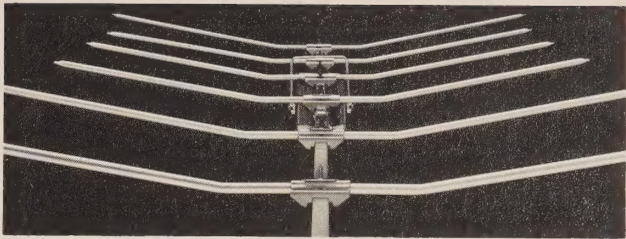


Type		Fesa 4 Ra/K 2	Fesa 4 Ra/K 3	Fesa 4 Ra/K 4
Ordering code		912 652-202	912 652-203	912 652-204
Channel		2	3	4
Gain	dB	6	6	6
Front-to-back-ratio	dB	18	18	18
↗ horizontal		60°	60°	60°
↗ vertical		95°	95°	95°
Mechanical length	m	2,42	2,22	2,09
Windload horizontal	N	141	125	112
Windload vertical	N	191	171	156
Weight/piece	kg	2,75	2,65	2,50
Packing dimensions	cm	186 x 20 x 13,5	186 x 20 x 13,5	186 x 20 x 13,5

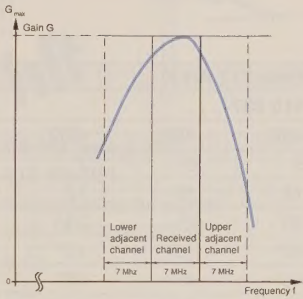


Super-Magneta-series
high gain One-Channel
Antennas for Band III

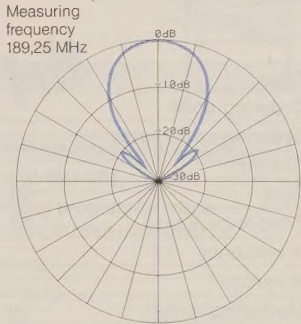
- Mechanical advantages:
- ☐ Short mechanical length referring to gain
 - ☐ Low windload
 - ☐ Pre-assembled. No loose parts
 - ☐ For connection of coaxial or symmetrical cable.
 - ☐ Fixing brackets for masts up to 60 mm diameters



- Electrical advantages:
- ☐ The folded dipole as normally used with Yagi antennas is replaced by a half wavelength double feeder placed transversally underneath the antenna elements - the Magneta principle
 - ☐ Top gain up to 13 dB in one channel by high resonance effect
 - ☐ High front-to-back-ratio of up to 30 dB
 - ☐ Extremely favourable radiation pattern with high sidelobe attenuation
 - ☐ Small opening angles



Typical selectivity curve of
Super-Magneta
Example: Fesa 309 AN K ..

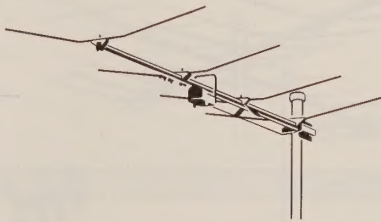


Typical radiation pattern of
Super-Magneta
Example: Fesa 313 AN K 7

One-Channel Antenna
Super Magneta Series

- Pre-mast antenna
9 dB gain class
- ☐ Suitable for horizontal and vertical installation

- ☐ No additional accessoires required for vertical installation



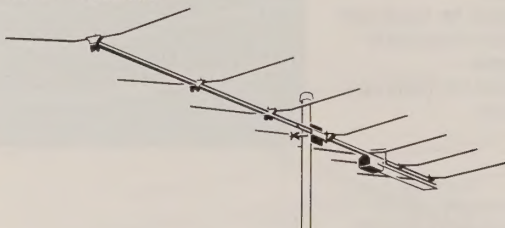
Type	Fesa 309 AN K . .							
Ordering code	910 838- . . .							
Ordering code index	-005	-006	-007	-008	-009	-010	-011	-012
Channel	5	6	7	8	9	10	11	12
Gain	dB 9	9	9	9	9	9	9	9
Front-to-back-ratio	dB 23	23	23	23	23	23	23	23
↗ horizontal	52°	52°	52°	52°	52°	52°	52°	52°
↗ vertical	66°	66°	66°	66°	66°	66°	66°	66°
Mechanical length	m 1,53	1,48	1,44	1,39	1,35	1,29	1,23	1,24
Windload horizontal	N 32	31	30	29	29	28	27	27
Windload vertical	N 54	52	50	49	47	46	44	44
Weight/piece	kg 1,34	1,34	1,34	1,3	1,3	1,3	1,3	1,3
Packing dimensions	cm 112 x 14 x 11	104 x 14 x 11						

One-Channel Antenna
Super-Magneta Series

High-gain antenna of the
12 dB gain class

☐ Suitable for horizontal and
vertical installation

☐ Stand-off attachment Trag 53
required for vertical installation
(see page 22)

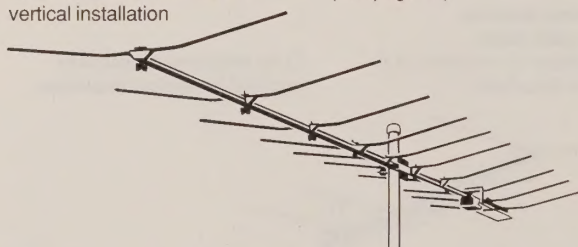


Type	Fesa 312 AN K . .						
Ordering code	910 837- . . .						
Ordering code index	-005	-006	-007	-008	-009	-010	-011
Channel	5	6	7	8	9	10	11
Gain	dB 12	12	12	12	12	12	12
Front-to-back-ratio	dB 25	25	25	25	25	25	25
↗ horizontal	40°	40°	40°	40°	40°	40°	40°
↗ vertical	45°	45°	45°	45°	45°	45°	45°
Mechanical length	m 2,88	2,77	2,66	2,57	2,48	2,39	2,32
Windload horizontal	N 48	47	45	44	43	42	40
Windload vertical	N 88	85	81	78	75	73	71
Weight/piece	kg 1,6	1,6	1,6	1,6	1,6	1,6	1,6
Packing dimensions	cm 148 x 14 x 11	137 x 14 x 11				124 x 14 x 11	

Top-gain antenna of the
13 dB gain class

☐ Suitable for horizontal and
vertical installation

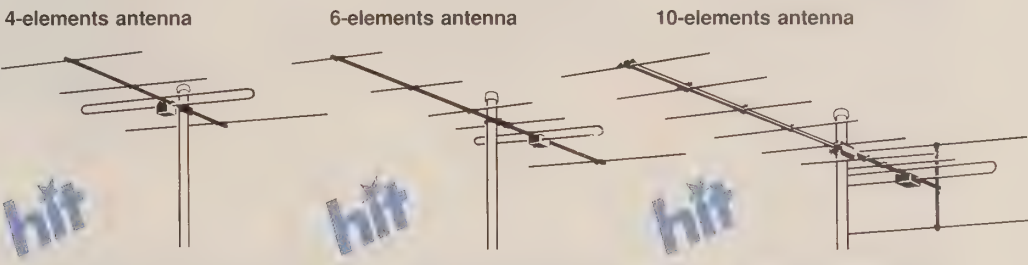
☐ Stand-off attachment Trag 53
required for vertical installation
(see page 22)



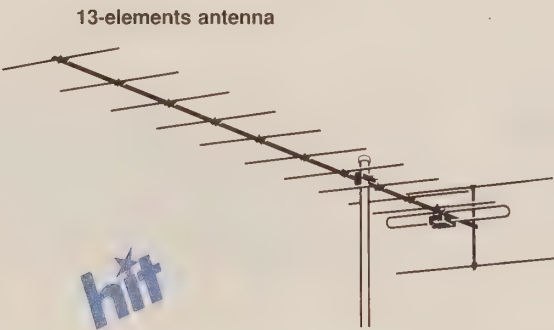
Type	Fesa 313 AN K . .							
Ordering code	910 836- . . .							
Ordering code index	-005	-006	-007	-008	-009	-010	-011	-012
Channel	5	6	7	8	9	10	11	12
Gain	dB 13	13	13	13	13	13	13	13
Front-to-back-ratio	dB 28	29	30	29	28	28	28	28
↗ horizontal	38°	38°	37°	37°	36°	37°	36°	36°
↗ vertical	38°	38°	40°	40°	39°	39°	42°	39°
Mechanical length	m 3,7	3,7	3,6	3,6	3,5	3,3	3,2	3,2
Windload horizontal	N 68	66	64	62	61	59	57	56
Windload vertical	N 122	120	116	113	111	105	103	101
Weight/piece	kg 2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5
Packing dimensions	cm 135 x 18 x 11	127 x 18 x 11				117 x 18 x 11		

**TV-antennas for
channels 5-12**

- ☐ Suitable for horizontal and
vertical installation
☐ Stand-off attachment Trag 53
for vertical installation
- ☐ Coaxial or symmetrical
connection



Type	Hit Fesa 4 BV		SB-Hit Fesa 6 BV		SB-Hit Fesa 10 BV	
Ordering code	910 890-001		910 896-001		910 897-001	
Description	fixing brackets for masts up to 54 mm diameters		fixing brackets for masts up to 54 mm diameters		fixing brackets for masts up to 60 mm diameters	
Channel	5-12		5-12		5-12	
Gain	dB	5,5		7-8		7,5-10
Front-to-back-ratio	dB	14		16		20
↗ horizontal		60°		55°		50°
↗ vertical		95°		75°		63°
Mechanical length	m	0,53		1,02		1,68
Windload horizontal	N	32		44		55
Windload vertical	N	36		56		74
Weight/piece	kg	0,5		0,6		1,2
Packing dimensions	cm	18 x 96		18 x 126		28 x 106



Type	Hit Fesa 13 BV	
Ordering code	910 893-001	
Description	fixing brackets for masts up to 60 mm diameters	
Channel	5-12	
Gain	dB	9-11
Front-to-back-ratio	dB	23
↗ horizontal		45°
↗ vertical		60°
Mechanical length	m	2,51
Windload horizontal	N	89
Windload vertical	N	112
Weight/piece	kg	1,5
Packing dimensions	cm	25 x 146

- Flexible coupling lead**
- ☐ With connection box for com-
bining 2 antennas installed either
stacked or in parallel



Type	Feko 30 A	
Ordering code	910 283-000	

Super-Spectral 800 Serie

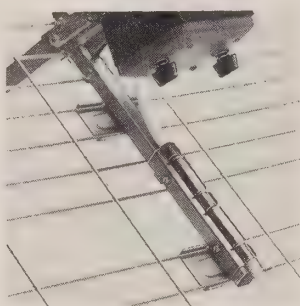
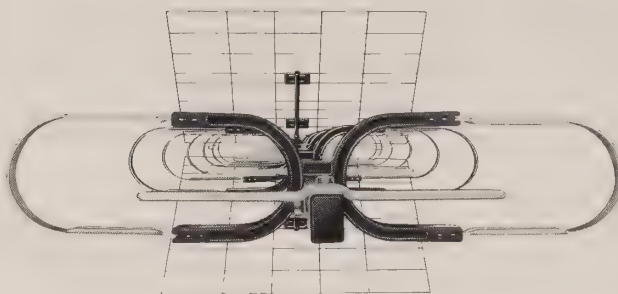
**The UHF high-gain
antennas with the striking
advantages:**

- ☐ Special tuning of the antenna characteristics by a combination of single and double directors
- ☐ Top gains up to 18 dB
- ☐ High front-to-back-ratio with values higher than 30 dB
- ☐ Extremely favourable radiation pattern with high side-lobe attenuation by surface wave trap
- ☐ Small opening angles

Mechanical advantages:

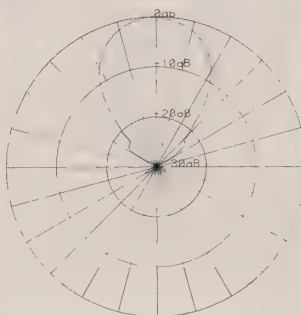
- ☐ All antennas are pre-assembled; no loose parts
- ☐ For connection of coaxial or symmetrical cable
- ☐ Surface wave trap serves also as additional fixing element and strain release for antenna cable

The outstanding features of the Super-Spectral series is a combination of usual double director elements and single director elements. This arrangement of directors allows a special tuning of the antenna with reference to radiation pattern and broadband reception.

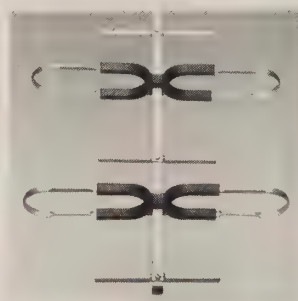


Surface wave trap

Measuring frequency 600 MHz

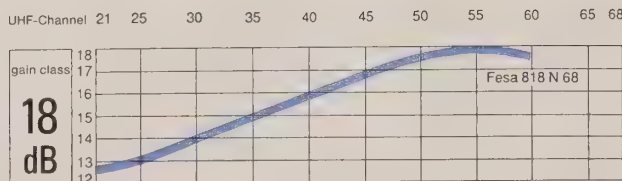
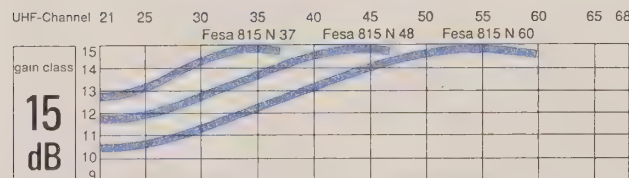
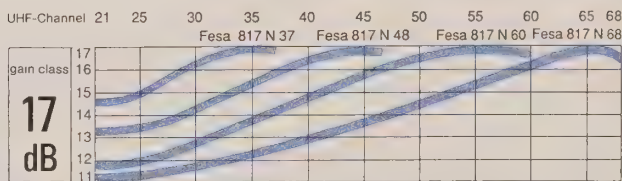
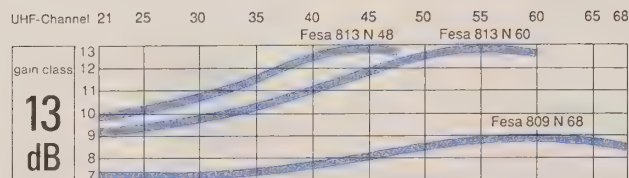


*Typical radiation pattern of
Super-Spectral Antennas*



*Arrangement of double and
single director elements on the
antenna beam*

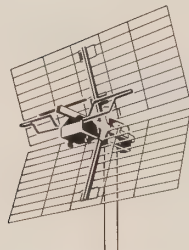
Super-Spectral antennas Gain diagramm



Super-Spectral series

Pre-mast antenna
9 dB gain class

☐ Suitable for horizontal and
vertical installation



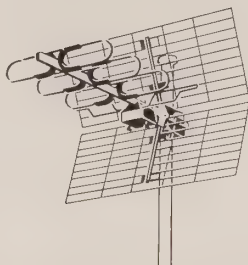
For channels 21-68

Type	Fesa 809 N 68			
Ordering code	910 856-001			
Channel		21-35	36-53	54-68
Gain	dB	7	8	9
Front-to-back-ratio	dB	24	26	22
↖ horizontal		54°	48°	46°
↖ vertical		77°	72°	63°
Mechanical length	m	0,31		
Windload horizontal	N	46		
Windload vertical	N	51		
Weight/piece	kg	1,7		
Packing dimensions	cm	58 x 36,5 x 11		

Super-Spectral series

Pre-mast antenna
13 dB gain class

☐ Suitable for horizontal and
vertical installation



For channels 21-48

Type	Fesa 813 N 48					
Ordering code	910 858-001					
Channel		21-23	24-27	28-34	35-42	43-48
Gain	dB	9,5	10	11	12	13
Front-to-back-ratio	dB	29	>30	27	27	29
↔ horizontal		50°	48°	45°	41°	37°
↕ vertical		67°	65°	62°	53°	47°
Mechanical length	m	0,84				
Windload horizontal	N	61				
Windload vertical	N	82				
Weight/piece	kg	2,1				
Packing dimensions	cm	70,5 x 42 x 11				

For channels 21-60

Type	Fesa 813 N 60							
Ordering code	910 859-001							
Channel		21-25	26-30	31-36	37-42	43-49	50-55	56-60
Gain	dB	9	9,5	10	11	12	13	13
Front-to-back-ratio	dB	23	26	>30	>30	29	28	23
↔ horizontal		55°	53°	49°	45°	42°	39°	33°
↕ vertical		71°	68°	66°	60°	54°	49°	43°
Mechanical length	m	0,7						
Windload horizontal	N	59						
Windload vertical	N	76						
Weight/piece	kg	2,0						
Packing dimensions	cm	58 x 38,5 x 11						

Super-Spectral series

Pre-mast antenna
15 dB gain class
☐ Suitable for horizontal and
vertical installation


For channels 21-37

Type	Fesa 815 N 37			
Ordering code	910 862-001			
Channel		21-24	25-30	31-37
Gain	dB	12,5	13,5	15
Front-to-back-ratio	dB	>30	30	>30
↔ horizontal		42°	37°	31°
↕ vertical		50°	43°	34°
Mechanical length	m	1,45		
Windload horizontal	N	89		
Windload vertical	N	124		
Weight/piece	kg	2,8		
Packing dimensions	cm	78 x 49,5 x 11		

For channels 21-48

Type	Fesa 815 N 48				
Ordering code	910 863-001				
Channel		21-23	24-28	29-34	35-41 42-48
Gain	dB	11,5	12	13	14 15
Front-to-back-ratio	dB	28	30	28	>30 26
↔ horizontal		52°	48°	42°	36° 29°
↕ vertical					
Mechanical length	m	1,38			
Windload horizontal	N	87			
Windload vertical	N	120			
Weight/piece	kg	2,7			
Packing dimensions	cm	70,5 x 49,5 x 11			

For channels 21-60

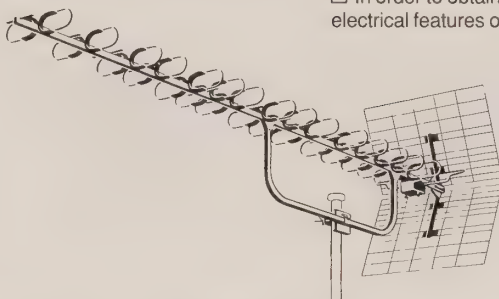
Type	Fesa 815 N 60						
Ordering code	910 864-001						
Channel		21-25	26-30	31-36	37-42	43-49	50-55 56-60
Gain	dB	10	11	12	13	14	15 15
Front-to-back-ratio	dB	28	29	>30	>30	>30	29 29
↔ horizontal		48°	43°	39°	35°	32°	30° 29°
↕ vertical		55°	50°	46°	41°	37°	33° 32°
Mechanical length	m	1,27					
Windload horizontal	N	84					
Windload vertical	N	113					
Weight/piece	kg	2,6					
Packing dimensions	cm	63,5 x 49,5 x 11					

Super-Spectral series

**Antenna of the 17 dB
gain class**

- ☐ Suitable for horizontal and vertical installation
- ☐ In order to obtain maximum electrical features of horizontal

polarized signals it is recommended to install the antenna either at the top of the mast or at a stand-off attachment (Trag 53)



For channels 21-37

Type	Fesa 817 N 37			
Ordering code	910 866-001			
Channel	21-23	24-26	27-30	31-37
Gain	dB 14,5	15	16	17
Front-to-back-ratio	dB 30	>30	>30	28
↔ horizontal	33°	30°	28°	23°
↕ vertical	37°	35°	32°	26°
Mechanical length	m 2,72			
Windload horizontal	N 136			
Windload vertical	N 217			
Weight/piece	kg 3,8			
Packing dimensions	cm 104,5 x 61 x 11			

For channels 21-48

Type	Fesa 817 N 48				
Ordering code	910 867-001				
Channel	21-24	25-29	30-34	35-40	41-48
Gain	dB 13	14	15	16	17
Front-to-back-ratio	dB >30	27	30	29	29
↔ horizontal	34°	33°	30°	25°	21°
↕ vertical	37°	36°	33°	30°	24°
Mechanical length	m 2,54				
Windload horizontal	N 132				
Windload vertical	N 203				
Weight/piece	kg 3,8				
Packing dimensions	cm 99,5 x 58 x 11				

For channels 21-60

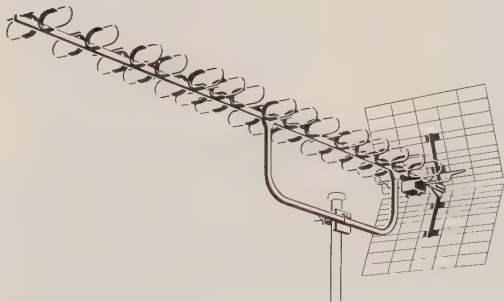
Type	Fesa 817 N 60						
Ordering code	910 868-001						
Channel	21-25	26-31	32-38	39-46	47-50	51-55	56-60
Gain	dB 11,5	13	14	15	16	17	17
Front-to-back-ratio	dB 26	30	>30	30	30	28	25
↔ horizontal	40°	37°	33°	28°	26°	24°	21°
↕ vertical	49°	44°	38°	34°	32°	28°	26°
Mechanical length	m 2,2						
Windload horizontal	N 125						
Windload vertical	N 186						
Weight/piece	kg 3,6						
Packing dimensions	cm 83,5 x 49,5 x 11						

Super-Spectral series

Antenna of the 17 dB class

- ☐ Suitable for horizontal and vertical installation
- ☐ In order to obtain maximum electrical features of horizontal

polarized signals it is recommended to install the antenna either at the top of the mast or at a stand-off attachment (Trag 53)



For channels 21-68

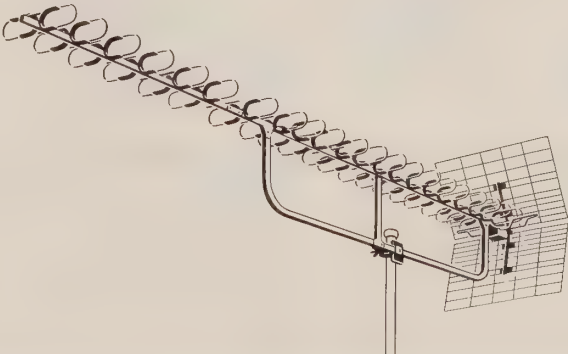
Type	Fesa 817 N 68							
Ordering code	910 869-001							
Channel		21-26	27-33	34-40	41-48	49-55	56-62	63-68
Gain	dB	10,5	12	13	14	15	16	17
Front-to-back-ratio	dB	24	28	30	>30	28	27	26
↔ horizontal		43°	39°	35°	31°	27°	24°	21°
↕ vertical		51°	45°	40°	35°	31°	28°	26°
Mechanical length	m	2,08						
Windload horizontal	N	124						
Windload vertical	N	183						
Weight/piece	kg	3,4						
Packing dimensions	cm	115 x 38,5 x 11						

Super-Spectral series

Top-gain antenna of the 18 dB class

- ☐ Suitable for horizontal and vertical installation
- ☐ In order to obtain maximum electrical features of horizontal

polarized signals it is recommended to install the antenna either at the top of the mast or at a stand-off attachment (Trag 53)



For channels 21-60

Type	Fesa 818 N 60							
Ordering code	910 874-001							
Channel		21-25	26-31	32-38	39-46	47-50	51-55	56-60
Gain	dB	12,5	14	15	16	17	18	19
Front-to-back-ratio	dB	27	30	>30	>30	>30	30	29
↔ horizontal		37°	34°	28°	24°	21°	20°	19°
↕ vertical		45°	37°	31°	27°	24°	22°	20°
Mechanical length	m	2,94						
Windload horizontal	N	154						
Windload vertical	N	233						
Weight/piece	kg	5,2						
Packing dimensions	cm	99,5 x 58 x 11						

Hit-Broad Band Antennas

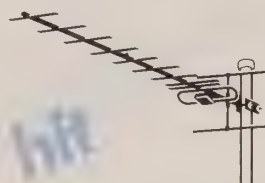
☐ Suitable for horizontal and vertical installation

☐ Coaxial or symmetrical connection

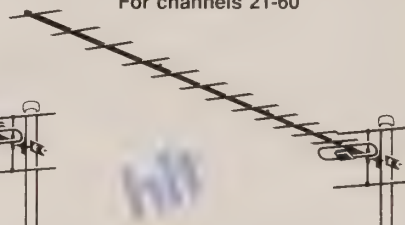
For channels 21-60



For channels 21-60

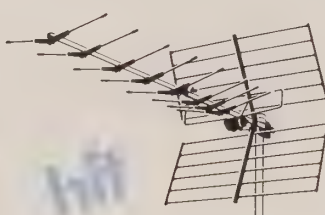


For channels 21-60

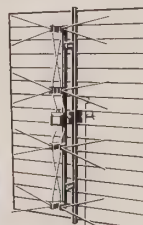


Type	SB-Hit Fesa 7 BO 60	SB-Hit Fesa 12 BO 60	SB-Hit Fesa 16 BO 60
Ordering code	910 621-000	910 622-000	910 623-000
Description	7-elements antenna fixing brackets for masts up to 54 mm diameter	12-elements antenna fixing brackets for masts up to 54 mm diameter	16-elements antenna fixing brackets for masts up to 60 mm diameter
Channel	21-60	21-60	21-60
Gain	dB 5-9,5	6-12	7-13
Front-to-back-ratio	dB 12-18	17-23	20-25
✕ horizontal	67°-49°	64°-38°	62°-31°
✕ vertical	90°-63°	92°-49°	78°-41°
Mechanical length	m 0,64	1,07	1,58
Windload horizontal	N 16	20	22
Windload vertical	N 23	36	45
Weight/piece	kg 0,3	0,5	0,8
Packing dimensions	cm 16 x 85	16 x 75	20 x 75

For channels 21-60



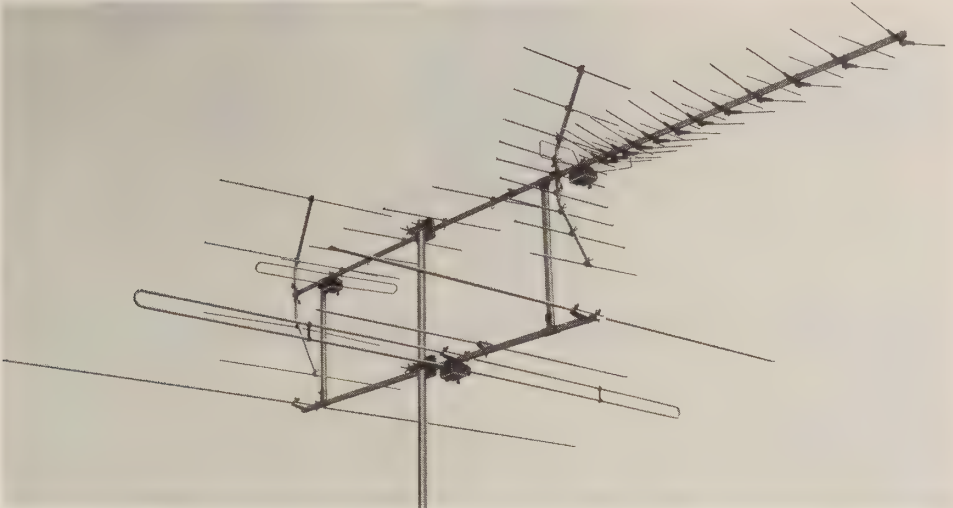
For channels 21-68



Type	Hit Fesa 243	Hit Fesa 805 Alu
Ordering code	910 840-003	910 486-001
Description	18-elements antenna fixing brackets for masts up to 54 mm diameter	Panel reflector antenna fixing brackets for masts up to 54 mm diameter
Channel	21-60	21-68
Gain	dB 7-13	10-13
Front-to-back-ratio	dB 20-26	20-23
✕ horizontal	52°-29°	50°-37°
✕ vertical	65°-37°	40°-28°
Mechanical length	m 1,25	Panel reflector 62 x 80 cm
Windload horizontal	N 95	46
Windload vertical	N 87	46
Weight/piece	kg 1,08	1,6
Packing dimensions	cm 65 x 59 x 10	86 x 63 x 21 (box for 3 ea.)



- ☐ Multiband antenna for the reception of TV channels 2 through 60 and FM radio
- ☐ For the higher mechanical stability and most efficient reception antenna elements are arranged in two levels
- ☐ Three separate connecting boxes for VHF I plus FM radio, VHF III and UHF
- ☐ Coupler for one downlead with 3 pre-assembled tail cables included
- ☐ Two fixing brackets for masts up to 62 mm diameter
- ☐ The Multiband antenna "Sky-Master" is most suitable for areas where many different TV stations from various directions can be received
- ☐ For long distance reception the remote-fed multiband amplifier APS 330 is recommended (see page 67)

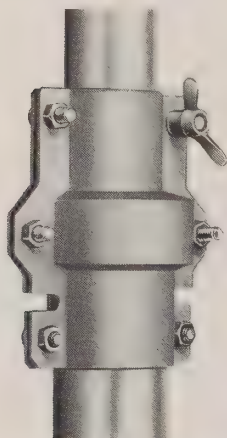


Type		Fesa 1234 Mb			
Ordering code		910 761-003			
Band		B I	B II	B III	B IV/V
Frequency range	MHz	47...68	87,5...104	174...230	470...790
Channel		2...4	-	5...12	21...60
Gain for FM	dB	4,5	0...-6	11	14
Front-to-back-ratio	dB	14	-	24	24
∠ horizontal		60°	-	38°	29°
Length	m	2,70	2,70	2,70	2,70
Windload horizontal	N	307	307	307	307
Weight/piece	kg	7,3	1.9	2.4	3
Packing dimensions	cm	one each in carton, length 195			

Telescopic Masts

- ☐ 2-sectional telescopic mast;
hot galvanized steel
- ☐ Inner mast-section secured
against pull-out

- ☐ Easy fixing of inner mast-
section by wing nut
- ☐ Sealed against penetration
of water and dust
- ☐ With cable entry holes;
rubber seals are supplied with
mast



Type		Schima 48/400	Schima 48/500	Schima 48/600	Schima 60/601
Ordering code		910 821-001	910 820-001	910 819-001	910 818-001
Total length	m	3,8	4,8	5,8	5,8
Mast-diameter/Wall thickness outer mast	mm	40/1,5	40/2	40/2	48/2
Mast-diameter/Wall thickness outer mast	mm	48/2	48/2	48/2,5	60/2,5
Length on delivery condition	m	2,1	2,6	3,1	3,1
Weight	kg	8,2	11,3	15	18,4
Cable entry holes	mm	3	4	5	5

**Load capacity of
telescopic masts**

Type		Schima 48/400	Schima 48/500	Schima 48/600	Schima 60/601
Total length	L_g m	3,80	4,80	5,80	5,80
Fixing distance between brackets	$L_e=1/6 L_g$ m ¹⁾	0,65	0,80	0,95	0,95
Max. permissible bending moment outer tube	M_g Nm	1055	1055	1278	1650 (2058) ²⁾
Antennas up to 20 m above ground	M_z Nm	849	723	790	1041 (1449) ²⁾
Antennas up to 20 m above ground	M_s Nm	206	332	488	609
Antennas exceeding 20 m above ground	M_z Nm	772	599	607	813 (1221) ²⁾
Antennas exceeding 20 m above ground	M_s Nm	283	456	671	837

M_z =permissible bending moment
at upper fixing point for the
mounted antennas

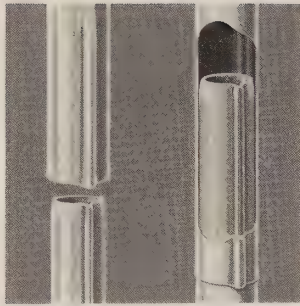
M_s =self moment of stackable
mast at upper fixing point

M_g =max. permissible bending
moment of the stackable mast

¹⁾ Figures rounded

²⁾ To be used only when suffi-
cient building stability has been
proved by static calculation

Stackable Masts



- ☐ Hot galvanized steel
- ☐ Different length of mast sections allow economical mast assemblies
- ☐ Stackable are mast sections of same outer diameter
- ☐ Secured against unwanted rotation

Type		Stema 420/150	Stema 420/200	Stema 420/300	Stema 51/200	Stema 51/300
Ordering code		811 077-001	811 077-002	811 077-003	810 853-000	810 854-000
Length	m	1,5	2	3	2	3
Outer diameter	mm	42	42	42	50	50
Wall thickness	mm	2	2	2	2	2
Weight	kg	2,94	3,92	5,9	4,74	7,12

Load capacity of stackable mast combinations

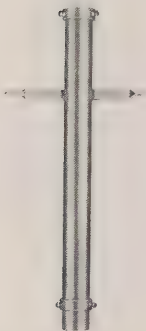
Stackable mast combinations		2x Stema 420/150	Stema 420/200 +Stema 420/150	2x Stema 420/200	Stema 420/300 +Stema 420/150
Total length L_g	m	2,85	3,35	3,85	4,35
Fixing distance between brackets $L_e=1/6L_g$	m	0,5	0,55	0,65	0,75
Max. permissible bending moment M_g	Nm	730	730	730	730
Antennas up to 20 m above ground M_z	Nm	619	572	524	469
Antennas up to 20 m above ground M_s	Nm	111	158	206	261
Antennas exceeding 20 m above ground M_z	Nm	577	513	446	371
Antennas exceeding 20 m above ground M_s	Nm	153	217	284	359

Stackable mast combinations		2x Stema 51/200	Stema 51/300 +Stema 51/200	2x Stema 51/300
Total length L_g	m	3,85	4,85	5,85
Fixing distance between brackets $L_e=1/6L_g$	m	0,65	0,80	1,00
Max. permissible bending moment M_g	Nm	1250	1250	1250
Antennas up to 20 m above ground M_z	Nm	1004	856	685
Antennas up to 20 m above ground M_s	Nm	246	394	565
Antennas exceeding 20 m above ground M_z	Nm	912	709	474
Antennas exceeding 20 m above ground M_s	Nm	338	541	776

M_z =permissible bending moment at upper fixing point
 M_s =self moment of stackable mast at upper fixing point
 M_g =max. permissible bending moment of the stackable mast

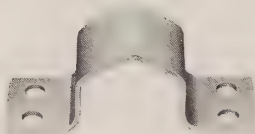
Mast Fixing
Brackets

- ☐ Throughpass mast fixing
for embedding into concrete of
flat roofs
☐ For masts with diameter up
to 60 mm
☐ Length 80 cm
☐ Wall thickness 3,5 mm
- ☐ Set of two mast fixing
brackets for wall mounting
☐ For masts with diameter
between 27 and 60 mm
☐ Distance between wall and
mast 225 mm
- ☐ Mast base bracket
☐ For fixing of masts with
diameter between 30 and 60 mm
on horizontal surfaces



Type	FId 50	Mh 50	Mf 63
Ordering code	601 136-000	601 140-000	910 781-001

Earth Strap and
Fixing Clamps



Type	Erb 50	Beg 42 U	Beg 50 U	Beg 60 U
Ordering code	910 397-000	810 971-000	810 909-000	810 910-000
Designation	Earth strap	Mast fixing clamp	Mast fixing clamp	Mast fixing clamp
For masts with outer diameter of	32-60 mm	42 mm	48-50 mm	60 mm

Mast Sealing
Collars

- ☐ Sealing collars made from
weather proof neoprene plastic
for sealing mast throughpasses
- ☐ Sealing collars made from
weather proof neoprene plastic
for sealing mast throughpasses
- ☐ Sealing collar for mast
throughpasses with additional
span strip



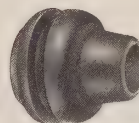
Type	Dab 42-2	Dab 50-2	Dab 60-1
Ordering code	601 025-000	601 026-001	910 822-001
For masts with outer diameter of	40-48 mm	48-57 mm	32-60 mm

Mast cap
Rubber seal

- Mast cap**
- ☐ Plastic type, weather-proof
 - ☐ Self fixing
 - ☐ For masts with diameters between 32 and 50 mm



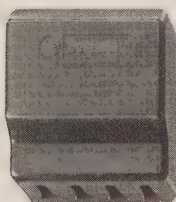
- Rubber cap**
- ☐ Rubber seal for tightening cable inserts in mast sections
 - ☐ For holes with 13 mm diameter



Type	Maka 15	Gt 8 V
Ordering code	910 231-000	910 366-000

Plastic housing

- ☐ Empty plastic housing for outdoor installation of suppression filters, distribution boxes, couplers etc.
- ☐ For masts up to 60 mm diameter



Type	Mg 1
Ordering code	847 753-001

Earth bar

- ☐ For grounding of six coaxial cables with outer diameter of up to 6 mm
- ☐ Connection for grounding lead with minimum diameter of 2 mm



Type	Es 6
Ordering code	942 234-001

Anti-corrosion paste

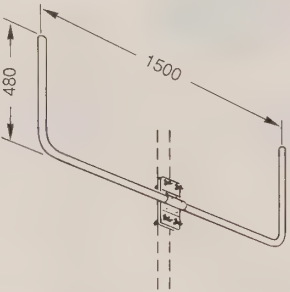
- ☐ Prevents corrosion of contacts and screws
- ☐ Contents per tube: 10 g



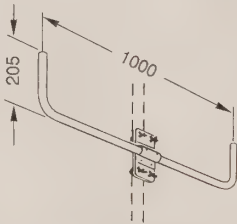
Type	Antenol 10
Ordering code	912 784-000

Support for Band III
Antennas and Stand-off
Attachment for UHF-
Antennas

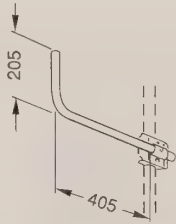
- Support for band III
antennas**
- ☐ Antenna twin support for parallel installation of two Band III antennas
 - ☐ Fixing bracket for masts up to 60 mm diameter
 - ☐ Windload 68 N



- Stand-off attachment for
UHF-antennas**
- ☐ Antenna twin support for the parallel installation of two UHF-antennas
 - ☐ Fixing bracket for masts up to 60 mm diameter
 - ☐ Windload 38 N



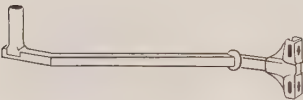
- Stand-off attachment for
UHF-antennas**
- ☐ For installation of UHF-antennas aside the antenna mast
 - ☐ Fixing bracket for masts up to 60 mm diameter
 - ☐ Windload 18 N



Type	Trag 36	Trag 56	Trag 53
Ordering code	910 854-001	910 855-001	912 027-000

Window-Support

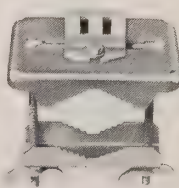
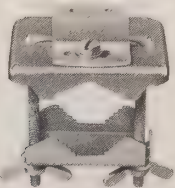
- ☐ For small-sized antennas
- ☐ Length 67 cm



Type	Fetra 2
Ordering code	911 085-000

Spare Parts
Mast Fixing Brackets

- ☐ For masts up to 60 mm diameter
- ☐ Hot galvanized
- ☐ For horizontal and vertical installation
- ☐ For antennas with rectangular main support of 20 x 20 mm, mainly for Band I-types (R-series)
- ☐ For antennas with rectangular main support of 12 x 18 mm, for Band III and UHF-types
- ☐ For antennas with rectangular main support of 12 x 12 mm mainly for all BV-types



Type	Fesa 4 R-U 41	Fesa 3 D-U 40	Fesa 10 BH-U 40
Ordering code	811 130-000	810 687-000	811 907-000

Insulating Head

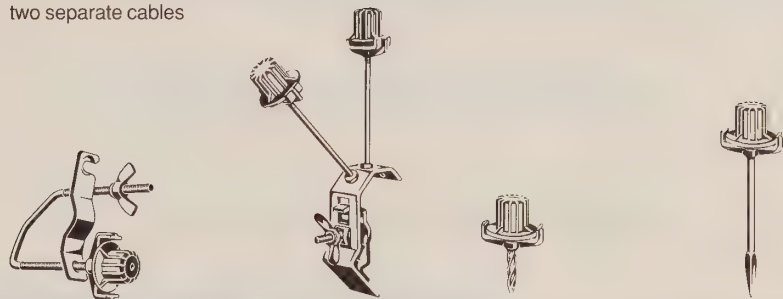
- ☐ Insulating head for two cables
- ☐ Unbreakable plastic material



Type	Ik 120
Ordering code	910 272-000

Stand-off Insulators for Cable Downleads

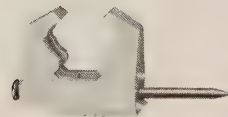
- ☐ All stand-off insulators are supplied with insulating head Ik 120 which allows the fixing of two separate cables



Type	Kama 42	Kari 72	Kaspi 12	Kaspi 120
Ordering code	910 264-000	910 290-000	910 270-000	910 274-000
Application	Antenna masts 25-60 mm diameter	Gutter	Stone or concrete wall	Any surface
Length of stand-off	10 cm	12 cm	height of Ik 120	10 cm
Fixing	Mast clamp	Clamp	Nail	Nail
Special features	One additional Ik 120 can be screwed on thread of mast clamp	Two supports for fixing in three different angles	Insulator detachable	Insulator detachable

Indoor Insulator

- ☐ Cable clip made from unbreakable plastic material
- ☐ With steel nail



Type	Rac 63
Ordering code	947 000-000

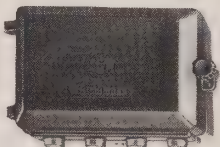
Outdoor couplers

☐ Weatherproof plastic box
with fixing clamps for masts up
to 50 mm diameter

Type A
Dimensions:
107 x 65 x 47 mm



Type B
Dimensions:
135 x 90 x 60 mm



Type C
Dimensions:
185 x 120 x 80 mm



Multiband Couplers

☐ To combine or separate two or
more frequency ranges

☐ Coaxial input and output
(Hit Awn 264/60 B 3/4 also
symmetrical input)

☐ Cable connection by screw

Type Ordering code	Housing type	AM	FM	B I Ch 2-4	B III Ch 5-12	B IV/ V Ch 21-68
Hit Awn 60 B 3/4 945 036-000	A					
					1	1
						2
Wak 301 945 004-000	B					
				1	1	1
						2
Hit Awn 264/60 B 3/4 945 051-000	A					
					1	1
						2,5

Blue bars indicate input frequency ranges.
Figures stand for insertion loss in dB.

Multiband Couplers for additional Feeding-in of UHF-Channels

☐ For combining or separating of frequency ranges and/or single channels or groups of channels

☐ Coaxial inputs and output
☐ Cable connection by screw

Type Ordering code	Housing type	AM	FM	B I Ch 2-4	B III Ch 5-12	B IV/V Ch 21-68
Bwa 351 K 21...60 945 142-121...160	B					Throughpass Ch ²⁾ Throughpass 0,5 1 2,5 1
Bwa 451 K 21...60 945 143-121...160	C					Throughpass Ch ²⁾ Throughpass 0,5 0,5 1 2,5 1
Bwa 551 K.. + K.. see table below	C					Throughpass ²⁾ Ch ²⁾ Throughpass ²⁾ Ch ²⁾ Throughpass ²⁾ 0,5 0,5 1 3 1 2,5 1
Bwa 581 K 21...60 945 145-121...160	C				5 + 7-12	Throughpass Ch ²⁾ Throughpass 0,5 1,5 1,5 1 2,5 1
Bwa 584 K 21...60 945 148-121...160	C				5-7 + 9-12	Throughpass Ch ²⁾ Throughpass 0,5 1,5 1,5 1 2,5 1
Bwa 582 K 21...60 945 146-121...160	C				5-8 + 10-12	Throughpass Ch ²⁾ Throughpass 0,5 1,5 1,5 1 2,5 1
Bwa 583 K 21...60 945 147-121...160	C				5-9 + 11-12	Throughpass Ch ²⁾ Throughpass 0,5 1,5 1,5 1 2,5 1

Blue bars indicate input frequency ranges. Bars connected by black lines indicate one input. Figures stand for insertion loss in dB.

1) Both channel inputs can be bridged.

2) Distance between feed-in channels and through-passed channels should be 2 channels minimum.

When ordering please specify channels to be fed-in.

Available Channel Combinations for Bwa 551K..+K..

Feed-in channels	Ordering code	Feed-in channels	Ordering code	Feed-in channels	Ordering code
K 21 + K 43	945 144-215	K 33 + K 54	945 144-209	K 43 + K 51	945 144-304
K 22 + K 55	-201	K 33 + K 56	-219	K 43 + K 56	-305
K 24 + K 56	-222	K 34 + K 40	-211	K 44 + K 47	-306
K 26 + K 49	-221	K 34 + K 53	-212	K 46 + K 51	-307
K 29 + K 41	-202	K 34 + K 54	-214	K 46 + K 53	-308
K 29 + K 51	-220	K 39 + K 43	-216	K 47 + K 57	-309
K 30 + K 50	-203	K 39 + K 51	-213	K 49 + K 55	-310
K 30 + K 60	-204	K 39 + K 52	-218	K 49 + K 60	-315
K 31 + K 41	-205	K 40 + K 44	-301	K 50 + K 56	-316
K 31 + K 42	-206	K 41 + K 45	-302	K 51 + K 54	-311
K 31 + K 49	-207	K 41 + K 59	-303	K 51 + K 58	-312
K 31 + K 56	-217	K 43 + K 49	-318	K 51 + K 59	-313
K 32 + K 45	-208	K 43 + K 50	-319	K 51 + K 60	-314
K 33 + K 46	-210			K 54 + K 59	-317

Further channel combinations on request.

Combination couplers

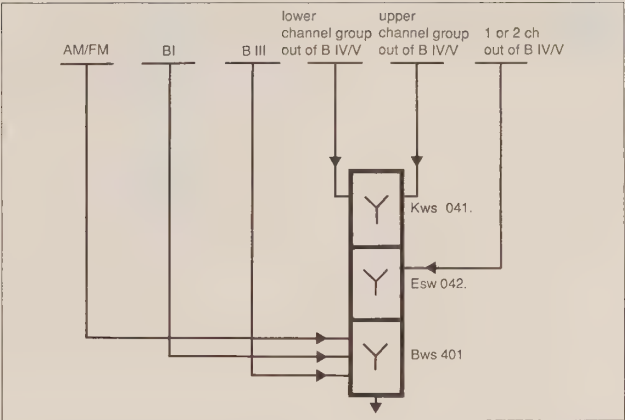
- ☐ To combine or separate frequency ranges and/or single channels or channel groups
- ☐ Coaxial inputs and output
- ☐ Cable connection by span clamp, without tools

Type Ordering code	Housing type	AM	FM	B I Ch 2-4	B III Ch 5-12	B IV/ V Ch 21-68
Wak 333 945 082-004	B				<div>5 + 7-12</div> <div>1,5 1,5</div>	<div></div> <div>1,5</div>
Wak 4310 945 114-001	C	<div></div>		<div></div> <div>1,5</div>	<div>5 + 7-12</div> <div>2 2</div>	<div></div> <div>1,5</div>
Wak 4312 945 114-003	C	<div></div>		<div></div> <div>1,5</div>	<div>5-7 + 9-12</div> <div>2 2</div>	<div></div> <div>1,5</div>
Wak 4314 945 114-005	C	<div></div>		<div></div> <div>1,5</div>	<div>5-9 + 11-12</div> <div>2 2</div>	<div></div> <div>1,5</div>
Wak 246 945 135-001	B					<div>21 - 24 + 27</div> <div>2 68</div> <div>2</div>
Wak 247 945 135-002	B					<div>21 - 46 + 49 - 68</div> <div>2 68</div> <div>2</div>

Blue bars indicate input frequency ranges.
Figures stand for insertion loss in dB.

Antenna Couplers for Indoor Installation

- ☐ Couplers in metal housing for indoor use
- ☐ Pluggable coupler to be connected in series to input and output sockets of multiband amplifiers
- ☐ Connection by coaxial plugs and sockets
- ☐ To be combined with various active and passive components
- ☐ Fixing brackets Bw 5 for wall installation to be ordered separately (see page 31)
- ☐ Dimensions 70 x 90 x 35 mm



Band Couplers

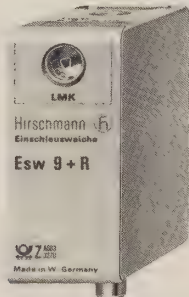


- ☐ For combining or separating of two or more frequency ranges
- ☐ Suppression rate towards other frequency ranges 40 dB

Type Ordering code P.T.T. approval nr.	Symbol	AM	FM	BI Ch 2-4	LSC	B III Ch 5-12	USC/ ESC	B IV/V Ch 21-68
Bws 401 947 260-002 A 683 028 V			1,5	1		1		0,5
Bws 202 947 338-001 A 683 027 V						up to 450 MHz	0,5	0,5

Blue bars indicate input frequency ranges.
Figures stand for insertion loss in dB.

Feeding-in Band Coupler

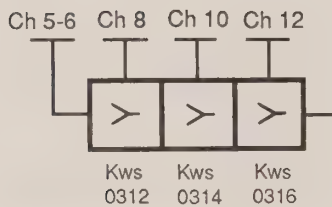


- ☐ For feeding-in AM-radio signals into existing antenna systems
- ☐ Connection to the output of house connecting amplifiers Shv-series
- ☐ Suppression rate AM towards VHF 50 dB

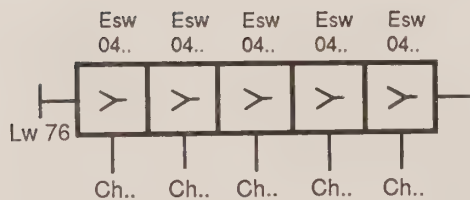
Type Ordering code P.T.T. approval nr.	Symbol	AM	FM	BI Ch 2-4	LSC	B III Ch 5-12	USC/ ESC	B IV/V Ch 21-68
Esw 9+R 947 293-002 A 683 027 U		0,5	0,3					0,3

Blue bars indicate input frequency ranges.
Figures stand for insertion loss in dB.

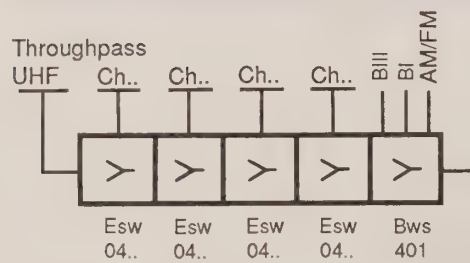
Examples for Application
of Indoor Couplers



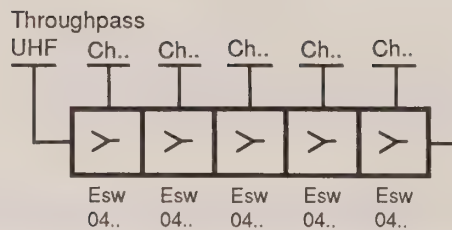
Combining or separating of
TV-channels in Band III



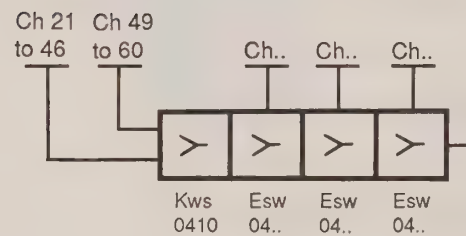
Assembly of feeding-in couplers
for selective separation of UHF-
channels



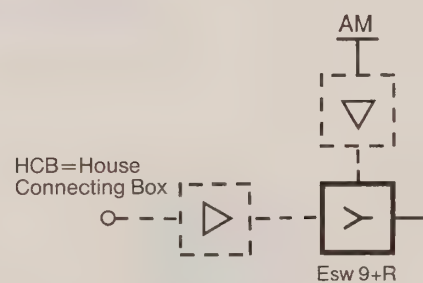
Combination of band coupler
for AM/FM + Band I + Band III +
UHF with feeding-in couplers
for UHF



Assembly of feeding-in couplers
for selective combining of UHF-
channels with throughpass non-
selective channels



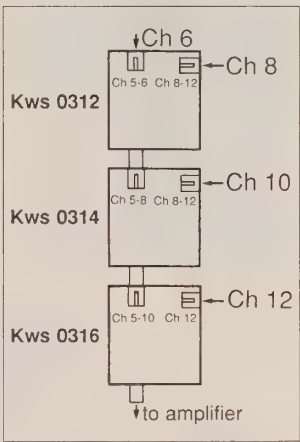
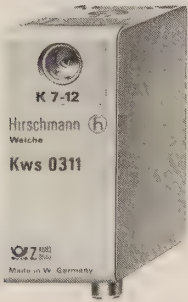
Combination of UHF-channel
coupler with UHF-feeding-in
couplers



Feeding-in of AM radio into a
CATV house distribution network

Channel Couplers

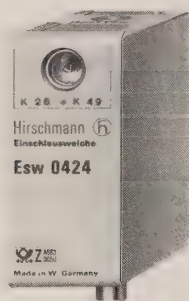
- ☐ For combining or separating of two or more channel groups and/or single channels
- ☐ Suppression rate towards other channels or channel groups 19 dB



Example for the combination of channel 6, 8, 10 und 12

Type	Symbol	AM	FM	B I	B III	UHF
Ordering code				Ch 2-4	Ch 5-12	Ch 21-68
P.T.T. approval nr.						
Kws 011 947 278-101 A 683 053 U				<div>2 + 4</div> <div>1 1</div>		
Kws 0311 947 275-101 A 683 054 U					<div>5 + 7-12</div> <div>1 1</div>	
Kws 0312 947 275-102 A 683 055 U					<div>5-6 + 8-12</div> <div>1 1</div>	
Kws 0313 947 275-103 A 683 056 U					<div>5-7 + 9-12</div> <div>1 1</div>	
Kws 0314 947 275-104 A 683 057 U					<div>5-8 + 10-12</div> <div>1 1</div>	
Kws 0315 947 275-105 A 683 058 U					<div>5-9 + 11-12</div> <div>1 1</div>	
Kws 0316 947 275-106 A 683 059 U					<div>5-10 + 12</div> <div>1 1</div>	
Kws 0410 945 277-110 A 683 060 U						<div>21 - 46 + 49 - 68</div> <div>1 1 1 1</div>
Kws 0412 947 277-112 A 683 061 U						<div>21 - 55 + 58-68</div> <div>1 1 1 1</div>

Blue bars indicate input frequency ranges.
Figures stand for insertion loss in dB.

Feeding-in
Couplers for UHF

- ☐ Couplers with 2 inputs
- ☐ Input 1: for one or two selective UHF-channels
- ☐ Input 2: Throughpass of non-selective channels
- ☐ Mechanical construction and electrical features allow cascading of two or more couplers
- ☐ Decoupling input 1 towards input 2: 15...20 dB

☐ Important: When ordering please specify selective channels

Type Ordering code P.T.T. approval nr.	Symbol	AM	FM	B I Ch 2-4	B III Ch 5-12	UHF Ch 21-68
Esw 0421 K 21...60 947 336-021...060 A 683 062 U						
Esw 0422 K 21...60 947 337-021...060 A 683 063 U						
Esw 0423 K... + K... channel combination see table A 683 064 U						
Esw 0424 K... + K... channel combination see table A 683 065 U						

Each blue bar indicates an input. Bars connected by black lines represent one input.
Figures stand for insertion loss in dB.

Channel combinations of feeding-in
couplers Esw 0423 K... + K...

Coupler	feed-in channels	Ordering code
Esw 0423 K 23 + K 26	K 23 + K 26	947 334-101
Esw 0423 K 29 + K 32	K 29 + K 32	947 334-201
Esw 0423 K 31 + K 34	K 31 + K 34	947 334-301
Esw 0423 K 37 + K 40	K 37 + K 40	947 334-401
Esw 0423 K 39 + K 42	K 39 + K 42	947 334-501
Esw 0423 K 43 + K 46	K 43 + K 46	947 334-601
Esw 0423 K 46 + K 49	K 46 + K 49	947 334-701

More channel combinations on request!!

Minimum distance between selective UHF-channels and
non-selective UHF-throughpass channels

Coupler	Normal reception	In case of strong differences between receiving levels
Esw 0421	2 UHF-Channels	3 UHF-Channels
Esw 0422	1 UHF-Channel	2 UHF-Channels
Esw 0423	2 UHF-Channels	3 UHF-Channels
Esw 0424	2 UHF-Channels	3 UHF-Channels
	Minimum distance between selective channels 3 UHF-channels	

Channel combinations of feeding-in
couplers Esw 0424 K... + K...

Coupler	feed-in channels	Ordering code
Esw 0424 K 25 + K 51	K 25 + K 51	947 335-210
Esw 0424 K 26 + K 49	K 26 + K 49	947 335-206
Esw 0424 K 29 + K 52	K 29 + K 52	947 335-201
Esw 0424 K 32 + K 45	K 32 + K 45	947 335-209
Esw 0424 K 33 + K 43	K 33 + K 43	947 335-202
Esw 0424 K 33 + K 46	K 33 + K 46	947 335-208
Esw 0424 K 33 + K 54	K 33 + K 54	947 335-203
Esw 0424 K 33 + K 56	K 33 + K 56	947 335-207
Esw 0424 K 34 + K 54	K 34 + K 54	947 335-212
Esw 0424 K 36 + K 46	K 36 + K 46	947 335-211
Esw 0424 K 37 + K 60	K 37 + K 60	947 335-204
Esw 0424 K 39 + K 51	K 39 + K 51	947 335-205
Esw 0424 K 41 + K 45	K 41 + K 45	947 335-301
Esw 0424 K 41 + K 59	K 41 + K 59	947 335-302
Esw 0424 K 42 + K 45	K 42 + K 45	947 335-310
Esw 0424 K 42 + K 58	K 42 + K 58	947 335-311
Esw 0424 K 43 + K 49	K 43 + K 49	947 335-309
Esw 0424 K 43 + K 56	K 43 + K 56	947 335-308
Esw 0424 K 44 + K 47	K 44 + K 47	947 335-304
Esw 0424 K 46 + K 53	K 46 + K 53	947 335-307
Esw 0424 K 50 + K 56	K 50 + K 56	947 335-303
Esw 0424 K 51 + K 54	K 51 + K 54	947 335-306
Esw 0424 K 53 + K 57	K 53 + K 57	947 335-305

More channel combinations on request!!

Couplers with built-in Attenuators



- ☐ Couplers with the possibility to equalize signal levels of different UHF-stations received by one UHF-broadband antenna
- ☐ Plug-in module for the connection to multiband amplifiers
- ☐ Range of adjustable attenuation 0...14 dB
- ☐ Level control accessible from front side

Type	Symbol	AM	FM	B I	B III	UHF
Ordering code				Ch 2-4	Ch 5-12	Ch 21-68
P.T.T. approval nr.						
Kws 0511						
947 264-101						
A 683 066 U						
Kws 0512						
947 264-102						
A 683 067 U						
Kws 0513						
947 264-103						
A 683 068 U						

Blue bars indicates separately adjustable frequency range.
 Figures below blue bars stand for insertion loss.

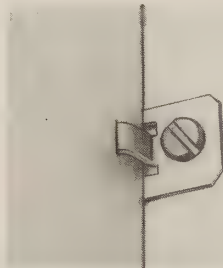
Remote Supply-Voltage Filter



- ☐ Remote supply-voltage filter for coupling or separation of high frequency and supply-voltage in case of remote feeding of pre-amplifiers through coaxial cable
- ☐ Pluggable to all amplifier inputs
- ☐ Connection of supply-voltage lead to the filter by screw
- ☐ Operational frequency: 0,15-862 MHz
- ☐ Throughpass attenuation: ≤0,5 dB
- ☐ Load limit: 42 V D.C./100 mA
- ☐ Shielding rate: up to 470 MHz ≥ 75 dB, 470-862 MHz ≥ 65 dB

Type	Fw 1
Ordering code	947 276-002
P.T.T. approval nr.	A 683 017 V

Fixing brackets



- ☐ Fixing brackets for the installation of plug-in modules to mounting plates
- ☐ Quantity per box: 10 brackets, 10 wood screws

Type	Bw 5
Ordering code	947 290-001

Separators

- ☐ For the connection of radio or TV-sets with separate symmetrical input socket to either individual antennas or community antenna systems
- ☐ White plastic housing
- Separator for TV**

☐ Separates VHF from UHF signals

☐ Connection by coaxial plug (Koswi 300)
- Separator for radio**

☐ Separates AM from FM signals

☐ Transformer for maximum AM-matching incorporated

☐ Connection by coaxial coupling (Kokwi 300)



Type	Ewf 7022	Ewr 7212
Ordering code	910 686-001	910 728-001



Suppression Filters for Medium Wave Frequencies

- ☐ For selective attenuation of a medium wave station
- ☐ Throughpass of FM-frequencies
- ☐ Shielding rate ≥ 75 dB
- ☐ Adjustment by tuning screw driver
- ☐ Plug-in module
- ☐ Dimensions: 50 x 22 x 36 mm



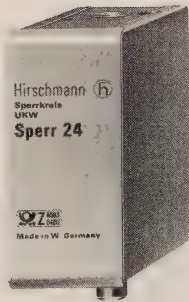
Type	Sperr 91	Sperr 92
Ordering code	947 288-002	947 289-002
P.T.T. approval nr.	A 683 029 V	A 683 030 V
Range	510-900 kHz	900-1650 kHz
Suppression rate	24 dB	21 dB

Suppression Filters for AM and FM Radio

- ☐ For selective attenuation of radio stations
- ☐ Plug-in modules
- ☐ Shielding rate ≥ 75 dB
- ☐ Adjustment by tuning screw driver which is supplied with
- ☐ Dimensions: 70 x 90 x 35 mm

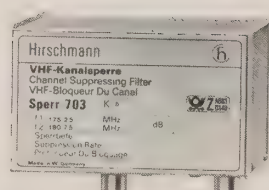
Sperr 24
☐ Suppression filter with four adjustable circuits for the attenuation of 1 to 4 FM stations
☐ Throughpass for AM-frequencies

Sperr 29
☐ Suppression filter for AM and FM radio
☐ One adjustable circuit for long wave frequencies
☐ Two adjustable circuits for medium wave frequencies
☐ Four adjustable circuits for FM-frequencies
☐ Throughpass of shortwave frequencies



Type	Sperr 24	Sperr 29
Ordering code	947 273-002	947 272-002
P.T.T. approval nr.	A 683 048 U	A 683 049 U
Suppression rate		
Range: (87,5...108 MHz)		
1 circuit adjusted to one station	15 dB	15 dB
2 circuits adjusted to one station	19 dB	19 dB
3 circuits adjusted to one station	22 dB	22 dB
4 circuits adjusted to one station	25 dB	25 dB
Suppression rate		
Range:		
LW (150...285 kHz)	-	24 dB
MW (500...900 kHz)	-	24 dB
MW (850...1650 kHz)	-	21 dB

Suppression Filters for
TV - VHF/UHF Range



- ☐ HF shielded metal housing
- ☐ Cable connection by coaxial plug
- ☐ Two delivery modes:
 - a) unadjusted
 - b) adjusted to channels as per customer's request
- ☐ Shielding rate ≥ 75 dB
- ☐ Throughpass for remote feeding voltage
- ☐ For mast installation ask for plastic cabinet Mg 1
- ☐ Dimensions: 104,5 x 77,5 x 42 mm

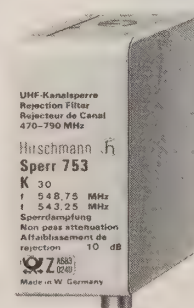
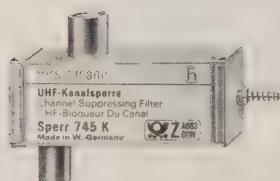
Type	Sperr 701	Sperr 703	Sperr 704	Sperr 705
Ordering code	947 284-...	947 285-...	947 286-...	947 287-...
Range	Band I (VHF)	Band III (VHF)	Band IV (UHF)	Band V (UHF)
Adjustment mode trap on picture carrier	18 dB	17 dB	15 dB	15 dB
Adjustment mode trap on sound carrier	18 dB	17 dB	15 dB	15 dB
Two traps adjusted to one frequency	40 dB	50 dB	40 dB	40 dB

Important: In case of ordering adjusted version channels to be suppressed and adjustment mode must be clearly specified.
If no remarks are stated in order, delivery will be unadjusted.

Suppression Filters for
TV - UHF Range

- Sperr 745**
- ☐ For selective attenuation of one UHF frequency
 - ☐ Adjustable by screw-driver within frequency range 470...790 MHz
 - ☐ Suppression rate $> 14,5$ dB
 - ☐ Throughpass attenuation 1dB at a distance of ± 10 MHz of suppressed frequency
 - ☐ Shielding rate ≥ 65 dB
 - ☐ Throughpass for remote feeding voltage
 - ☐ Plug in module
 - ☐ Dimensions: 25 x 70 x 20 mm

- Sperr 753**
- ☐ UHF-channel suppression filter
 - ☐ Factory adjusted to one UHF-channel (please state channel to be suppressed when ordering)
 - ☐ Suppression rate 10 dB
 - ☐ Shielding rate ≥ 65 dB
 - ☐ Throughpass for remote feeding voltage
 - ☐ Plug-in module



Type	Sperr 745	Sperr 753
Ordering code	947 178-002	947 339-221...260
P.T.T. approval nr.	A 683 019 V	A 683 024 V

Suppression Filter for
CB-Radio in the
27 MHz-Band

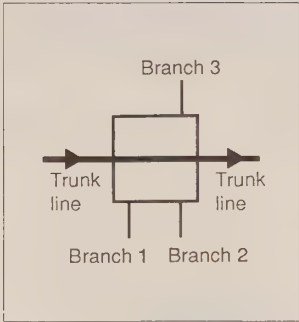


- ☐ Prevents the overloading of radio and TV amplifiers from nearby CB stations
- ☐ Operational frequency 26,5...28,5 MHz
- ☐ Suppression rate ≥ 75 dB
- ☐ Throughpass frequencies: 0,15...16 MHz, 47...790 MHz
- ☐ Throughpass attenuation 0,5 dB
- ☐ Dimensions: 50 x 22 x 36 mm

Typ	Sperr 7 CB
Ordering code	947 222-002
P.T.T. approval nr.	A 683 018 V



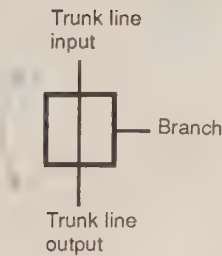
Tap-off Boxes



For branching off one or several secondary lines from a through-going trunk line.

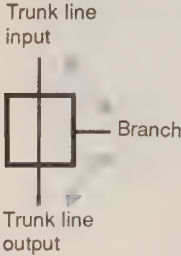
Throughpass attenuation

Attenuation between trunk line input and trunk line output



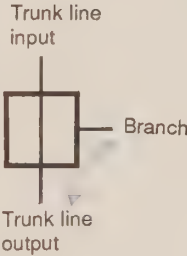
Branching attenuation

Attenuation between trunk line input and branch (for non-directional couplers, also between trunk line output and branch).



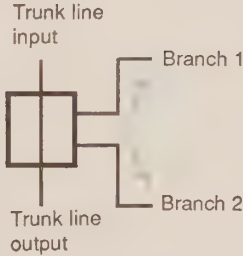
Directional loss

Attenuation between trunk line output and branch (for tap-off boxes with directional couplers).

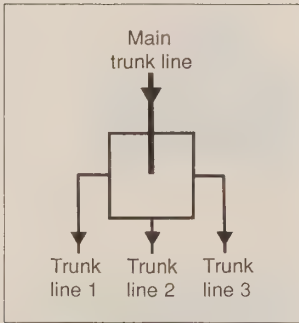


Mutual attenuation

Attenuation between the branched outputs.



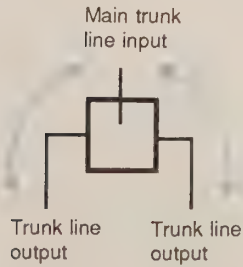
Distribution Boxes



For splitting one main trunk line into 2 or more trunk lines.

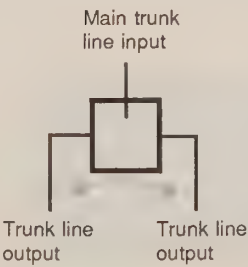
Distribution attenuation

Attenuation between main trunk line input and splitted trunk line outputs.



Mutual attenuation

Attenuation between outputs of splitted trunk lines.




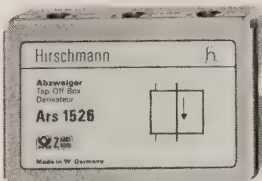













**Tap-off Boxes for Surface
Mounting or Installation into
70 mm and 100 x 100 mm
Flush Boxes**

☐ Shielding rate
up to 470 MHz ≥ 75 dB
470-862 MHz ≥ 65 dB

☐ For connection of coaxial
cables with outer diameter of
up to 8 mm (Koka 741)

☐ Maximum operational level
120 dB μ V
☐ Supplied with wood-screws for
wall fixing

	Type Ordering code P.T.T. approval nr.		Symbol
Directional coupling	Ars 1213 947 280-002 A 683 007 U		
	Ars 2013 947 322-002 A 683 008 U		
	Ars 1526 947 315-002 A 683 009 U		
	Ars 2026 947 323-002 A 683 010 U		
Transformer coupling	Azs 1413 947 181-002 A 683 011 U		
	Azs 2013 947 182-002 A 683 012 U		
	Azs 1526 947 186-002 A 683 013 U		
	Azs 2026 947 187-002 A 683 014 U		
	Azs 1536 947 190-002 A 683 015 U		
	Azs 2036 947 191-002 A 683 016 U		

☐ Aluminium die-cast housing,
diameter 60 mm, height 30 mm

☐ Die-cast housing with
steelsheet cover; Dimensions:
95 x 60 x 30 mm

		AM/FM	VHF	UHF
Branching attenuation	dB	13	13	13
Throughpass attenuation	dB	1	1	1
Mutual attenuation between the branched outputs	dB	-	-	-
Branching attenuation	dB	20	20	20
Throughpass attenuation	dB	1	1	1
Mutual attenuation between the branched outputs	dB	-	-	-
Branching attenuation	dB	15	15	15
Throughpass attenuation	dB	2/1	1	1,5
Mutual attenuation between the branched outputs	dB	26/45	45	40
Branching attenuation	dB	20	20	20
Throughpass attenuation	dB	2/1	1	1,5
Mutual attenuation between the branched outputs	dB	30/50	50	40
Branching attenuation	dB	14	14	14
Throughpass attenuation	dB	0,8	0,8	0,8
Mutual attenuation between the branched outputs	dB	-	-	-
Branching attenuation	dB	20	20	20
Throughpass attenuation	dB	1	1	1
Mutual attenuation between the branched outputs	dB	-	-	-
Branching attenuation	dB	15	15	15
Throughpass attenuation	dB	1,5	1,5	1,5
Mutual attenuation between the branched outputs	dB	28	28	28
Branching attenuation	dB	20	20	20
Throughpass attenuation	dB	1	1	1
Mutual attenuation between the branched outputs	dB	30	30	30
Branching attenuation	dB	18/16	16	16
Throughpass attenuation	dB	2,5	2,5	2,5
Mutual attenuation between the branched outputs	dB	29/26	26	25
Branching attenuation	dB	22/20	20	20
Throughpass attenuation	dB	1,2	1,2	1,2
Mutual attenuation between the branched outputs	dB	40/38	38	38

	Type Ordering code P.T.T. approval nr.	Symbol
Tap-off Boxes	Azs 1546 947 280-002 A 683 007 U	
	Azs 2046 947 322-002 A 683 008 U	
	Azs 2546 947 315-002 A 683 009 U	



Distribution Boxes	Vedo 0423 947 180-002 A 683 017 U		
	Vedo 0636 947 262-002 A 683 018 U		
	Vedo 0936 947 184-002 A 683 019 U		
	Vedo 0746 947 183-002 A 683 020 U		

Distribution Boxes for
Star Networks

- ☐ Cable connection by coaxial plugs of Kos series
- ☐ Shielding rate: up to 470 MHz ≥ 75 dB, 470-862 MHz ≥ 65 dB
- ☐ Metal housing for indoor installation
- ☐ Dimensions: 170 x 45 x 65 mm

	Vr 061 947 321-002 A 683 021 V		
	Vr 081 947 319-002 A 683 022 V		
	Vr 121 947 320-002 A 683 023 V		

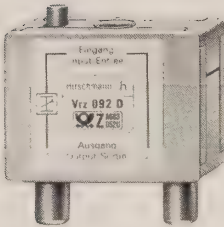


		AM/FM	VHF	UHF
Branching attenuation	dB	15	15	16
Throughpass attenuation	dB	2	2	2,3
Mutual attenuation between the branched outputs	dB	26	26	26
Branching attenuation	dB	20	20	20
Throughpass attenuation	dB	1,3	1,3	1,5
Mutual attenuation between the branched outputs	dB	32	32	32
Branching attenuation	dB	25	25	25
Throughpass attenuation	dB	1	1	1
Mutual attenuation between the branched outputs	dB	35	35	35
Distribution attenuation	dB	6/3,5	3,5	4
Mutual attenuation between the distributed outputs	dB	6-13/24	24	20
Distribution attenuation	dB	9/5,5	5,5	6
Mutual attenuation between the distributed outputs	dB	20	20	20
Distribution attenuation	dB	9/5,5	9,5	10
Mutual attenuation between the distributed outputs	dB	9	9,5	10
Distribution attenuation	dB	7	7	8
Mutual attenuation between the distributed outputs				
output 1/2 and output 3/4	dB	12/20	20	17
all other combinations	dB	16/24	24	22
Distribution attenuation	dB	-/13-18	13-18	13-18
Mutual attenuation between the distributed outputs	dB	-/≥40	≥40	≥36
Distribution attenuation	dB	-/13-19	13-19	13-19
Mutual attenuation between the distributed outputs	dB	-/≥40	≥40	≥36
Distribution attenuation	dB	-/13-22	13-22	13-22
Mutual attenuation between the distributed outputs	dB	-/≥40	≥40	≥36

Pluggable
Distribution Boxes

...for Amplifier Inputs

- ☐ Splitter
- ☐ For distribution of radio and TV signals to two inputs of multiband amplifiers as Sbe, Skl, Sns series
- ☐ Operational frequency range 0,15-862 MHz
- ☐ Dimensions: 54 x 59 x 24 mm
- ☐ Shielding rate: up to 470 MHz ≥ 75 dB 470-862 MHz ≥ 65 dB

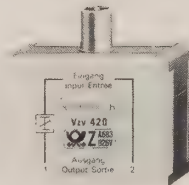


- ☐ Splitter
- ☐ For distribution of radio and TV signals to two inputs of amplifiers and converters of TOP series
- ☐ Throughpass for remote feeding voltage through one branch
- ☐ Shielding rate: up to 470 MHz ≥ 75 dB, 470-862 MHz ≥ 65 dB
- ☐ Operational frequency range 0,15-862 MHz
- ☐ Dimensions: 70 x 90 x 35 mm



...for Amplifier Outputs

- ☐ Splitter
- ☐ For connection of two trunk-lines to an amplifier output
- ☐ Shielding rate: up to 470 MHz ≥ 75 dB 470-862 MHz ≥ 65 dB
- ☐ Operational frequency range 0,15-862 MHz
- ☐ Dimensions: 54 x 55 x 24 mm



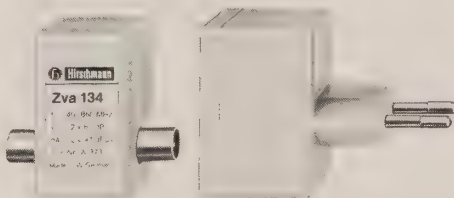
Type	Vrz 092 D			Vsv 042			Vzv 420		
Ordering code	962 764-002			947 295-002			962 709-002		
P.T.T. approval nr.	A 683 052 U			A 683 025 V			A 683 026 V		
Range	AM/FM	VHF	UHF	AM/FM	VHF	UHF	AM/FM	VHF	UHF
Distribution attenuation (dB)	4/3,5	3,5	4	4/3,5	3,5	4	3,5	3,5	3,5
Mutual attenuation between two connected receivers	4/24	24	20	4/24	24	20	3,5/20	20	20

Splitter for
Outlet Sockets

- ☐ Splitter
- ☐ For connection of two TV-sets to one outlet socket of Gedu and Edu series
- ☐ Also for connection of two radio sets, when adaptor Kvs 1 is used
- ☐ Shielding rate: up to 470 MHz ≥ 75 dB 470-862 MHz ≥ 65 dB



- ☐ Splitter
- ☐ Similar to Zgv 76 but with incorporated amplifier
- ☐ Power supply unit for direct plugging into mains socket
- ☐ Length of connecting lead between supply unit and splitter 1,5 m
- ☐ Operational frequency range 40-862 MHz



Type	Zgv 76			Zva 134		
Ordering code	910 805-002			944 440-001		
P.T.T. approval nr.	A 683 031 V			-		
Range	AM/FM	VHF	UHF	AM/FM	VHF	UHF
Distribution attenuation (dB)	3,5	3,5	3,5	Amplification 6 dB/output; max. output level 97 dB μ V		
Mutual attenuation between two connected receivers	3,5/18	18	18	-/15	15	15/13



Connectors for Coaxial Cables

Kvb 61

- ☐ Connector for coaxial cables with outer diameter of up to 7 mm
- ☐ Connection of inner conductor by screws; connection of screen by clamps
- ☐ Shielding rate 25 dB

Kvs 741

- ☐ Cables junction box; screw type
- ☐ For the connection of two coaxial cables with different outer diameters, for example Koka 712 with Koka 741
- ☐ Shielded housing for installation in flush boxes with 70 mm diameter

- ☐ Also for surface mounting
- ☐ Dimensions: semi-circle with 60 mm diameter, height 30 mm
- ☐ Shielding rate up to 470 MHz \geq 75 dB
470-862 MHz \geq 65 dB



Type	Kvb 61	Kvs 741
Ordering code	910 108-001	947 223-002
P.T.T. approval nr.	–	A 683 028 U

Plug-in Attenuators

- ☐ HF-proof plug-in attenuator with fixed attenuation values
- ☐ Male-/female connections
- ☐ Attenuation value printed on coloured collar
- ☐ Return loss VHF 19 dB, UHF 16 dB

- ☐ Impedance 75 Ω
- ☐ Shielding rate: up to 470 MHz \geq 75 dB
470-862 MHz \geq 65 dB
- ☐ Length 45 mm, diameter 15 mm

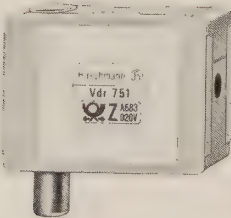


Type	Fdg 75/3	Fdg 75/6	Fdg 75/10	Fdg 75/12	Fdg 75/18
Ordering code	947 107-003	947 107-006	947 107-010	947 107-012	947 107-018
P.T.T. approval nr.	A 683 037 V	A 683 038 V	A 683 039 V	A 683 040 V	A 683 041 V
Attenuation	3 dB	6 dB	10 dB	12 dB	18 dB
Colour code	white	red	yellow	blue	green

Adjustable Attenuator

- ☐ HF shielded metal housing
- ☐ Male-/female connections
- ☐ Possible attenuations frequency range 0,5 - 400 MHz
0,5 - 20 dB
frequency range 470 - 860 MHz
0,5 - 18 dB

- ☐ Shielding rate: up to 470 MHz \geq 75 dB
470-862 MHz \geq 65 dB
- ☐ Impedance 75 Ω
- ☐ Dimensions: 54 x 55 x 24 mm



Type	Vdr 751
Ordering code	963 303-002
P.T.T. approval nr.	A 683 020 V

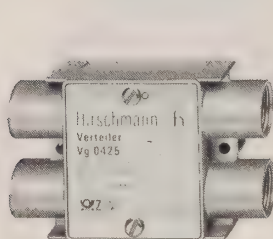
**Splitter, Distribution
Boxes and Tap-off Boxes
Vg- and Arg-Series**

- ☐ Die-cast aluminium housing
- ☐ For installation into distribution pedestals, amplifier cabinets or indoor locations
- ☐ Suitable for underground installation when thermoplast sleeves are used
- ☐ Cable connections: inner conductor by screw outer conductor by cable gland Pg 13.5

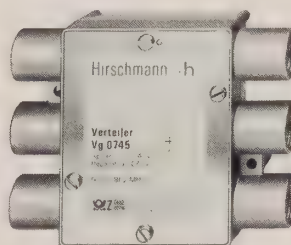
- ☐ Admissible diameter of outer conductor 6...12 mm
- ☐ Impedance 75 Ω
- ☐ Frequency range 0,15...862 MHz
- ☐ Reverse frequency operation 4...26 MHz
- ☐ Shielding rate 470...862 MHz ≥ 75 dB
- ☐ Temperature range -20°...+60°C



- ☐ 75 Ω terminal resistor in Arg line outputs is removable for the connection of continuing line
- ☐ Dimensions (mm) housing type 1: 125 x 70 x 35 housing type 2: 142 x 100 x 35
- ☐ Remote feeding types optional

Housing Type 1






Housing Type 2

**Splitter,
Distribution Boxes**

Type	Vg 0425	Vg 0745
Ordering code	947 353-001	947 354-001
P.T.T. approval nr.	G 683 021 W	G 683 022 W
Symbol		
Housing type	1	2
Distribution/ Branching attenuation		
0,15-26,1 MHz	dB 6-3,5	7,0
40-450 MHz	dB 3,5	7,0
470-862 MHz	dB 4,0	8,0
Mutual attenuation between branched outputs		
4,0-26,1 MHz	dB 12-44	10-22
40-450 MHz	dB 26,0	26-33
470-862 MHz	dB 26,0	26-33

Tap-off Boxes

Type	Arg 0815	Arg 1315	Arg 2015
Ordering code	947 344-001	947 345-001	947 346-001
P.T.T. approval nr.	G 683 023 W	G 683 024 W	G 683 025 W
Symbol			
Housing type	1	1	1
Branching attenuation			
0,15-862 MHz	dB 11-8	13,0	20,0
Throughpass attenuation			
0,15-862 MHz	dB 1,5	1,0	0,7
Directional loss output to branch			
0,15-1,6 MHz	dB 13	13	20
4,0-862 MHz	dB 32	32	32

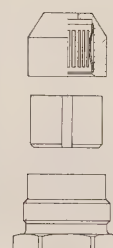
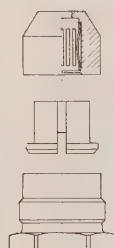
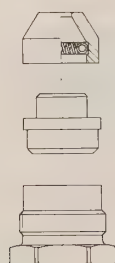
Tap-off Boxes, directional coupling

Type	Arg 0925		Arg 1425		Arg 2025	
Ordering code	947 347-001		947 348-001		947 349-001	
P.T.T. approval nr.	G 683 026 W		G 683 027 W		G 683 028 W	
Symbol						
Housing type	1		1		1	
Branching attenuation 0,15-862 MHz	dB	9,0	14,0		20,0	
Throughpass attenuation 0,15-862 MHz	dB	3,0	2,0		1,3	
Directional loss output to branch 0,15-1,6 MHz	dB	13	13		20	
4,0-862 MHz	dB	32	32		32	
Mutual attenuation between branched outputs 0,15-1,6 MHz	dB	26	26		40	
4,0-862MHz	dB	41	46		46	

Type	Arg 1045		Arg 1445		Arg 2045	
Ordering code	947 350-001		947 351-001		947 352-001	
P.T.T. approval nr.	G 683 029 W		G 683 030 W		G 683 031 W	
Symbol						
Housing type	2		2		2	
Branching attenuation 0,15-862 MHz	dB	12-8	14-15		20,0	
Throughpass attenuation 0,15-862 MHz	dB	5,5	3,5		3,0	
Directional loss output to branch 0,15-1,6 MHz	dB	13	13		20	
4,0-862 MHz	dB	32	32		32	
Mutual attenuation between branched outputs 0,15-1,6 MHz	dB	26	26		40	
4,0-862MHz	dB	40	46		46	

Cable Fittings for Splitters, Distribution Boxes and Tap-off Boxes Vg-/Arg- Series

☐ For the connection of coaxial
cables up to 14,8 mm outer
diameter



Type	Kaf 1306		Kaf 1308		Kaf 1312	
Ordering code	947 382-001		947 383-001		947 384-001	
For coaxial cables outer screen diameter	mm	6	8		12	
For coaxial cables of type	Koka 71, Koka 712		Koka 741		Koka 744	

Terminal Resistor 75 Ω

☐ For the reflexion free closing
of an unused output on splitter
and tap-off boxes of Vg-/Arg-
series

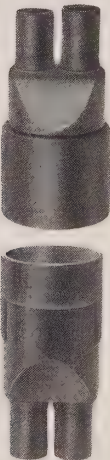


Type	Gw 1375
Ordering code	947 385-001

CATV Underground
Installation

☐ Thermoplast shrink housing
for CATV-components of type
Vg-/Arg-series

☐ For housing type 1 of
Vg-/Arg-series

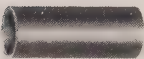


☐ For housing type 2 of
Vg-/Arg-series

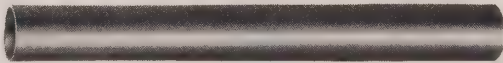


Type	SSY 4	SSY 6
Ordering code	947 430-001	947 431-001

☐ Thermoplast shrink sealing
cap
☐ For the sealing of open ends
of coaxial cables
☐ Remark:
A short piece of coaxial cable
(Koka 741) sealed by SSY 1775
can be used to close unused
inputs of thermoplast shrink
housings of type SSY 4 and
SSY 6



☐ Thermoplast shrink sleeve
☐ For the sealing of cable joints,
done by standard cable connec-
tors
☐ Dimensions unshrunk:
length 300mm
diameter 33mm
wall thickness 1mm
☐ Dimensions after shrinking:
length approx. 200 mm
diameter 9,5 mm
wall thickness 2,7 mm

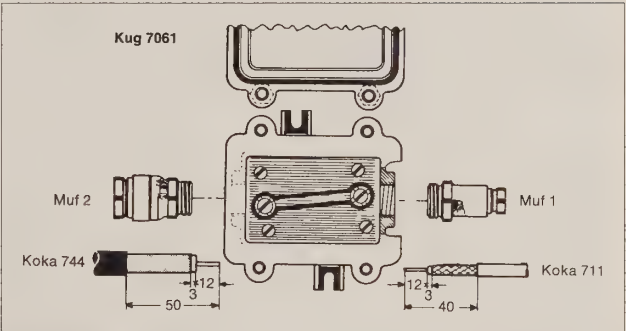
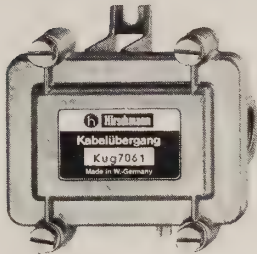


Type	SSY 1775	SSY 3330
Ordering code	811 017-000	810 950-002

Cable Junction Box

- ☐ Junction box for the connection of coaxial cables of same or different diameters
- ☐ Die-cast aluminium housing for indoor installation
- ☐ Cable connection by cable fittings Muf series
- ☐ Dimensions: 95 x 100 x 60 mm

- ☐ Operational frequency: 0...862 MHz
 - ☐ Throughpass attenuation: $\leq 0,2$ dB
 - ☐ Shielding rate: bis 470 MHz ≥ 75 dB
470-862 MHz ≥ 65 dB
- Mounting Example:

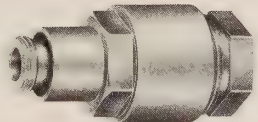


Type	Kug 7061
Ordering code	947 089-002
P.T.T. approval nr.	A 683 035 U

Cable Fittings

- ☐ Cable fittings for the connection of coaxial cables to CATV components Kug, Kuf, Lv 2200 and Sv 2200 series
- ☐ Operational frequency: 0,15...862 MHz

- ☐ Impedance: 75 Ω
- ☐ Shielding rate: up to 470 MHz ≥ 75 dB
470-862 MHz ≥ 65 dB
- ☐ Cable gland Pg 11



Type	Muf 1	Muf 2	Muf 3
Ordering code	947 135-000	947 136-000	947 149-001
P.T.T. approval nr.	A 683 077 V	A 683 078 V	A 683 079 V
Suitable for cables with diameter of screen	2,5 - 5 mm	5 - 11,5 mm	12 - 20 mm
Suitable for cable	Koka 711, 712	Koka 741, 744	



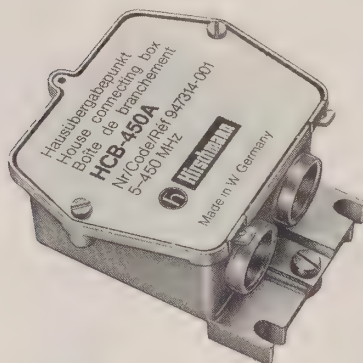
Type	Muf 10
Ordering code	947 176-001
P.T.T. approval nr.	A 683 080 V

Examples of Cable Fittings

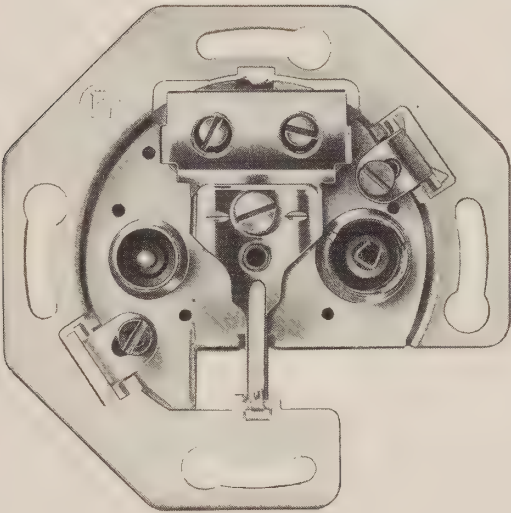
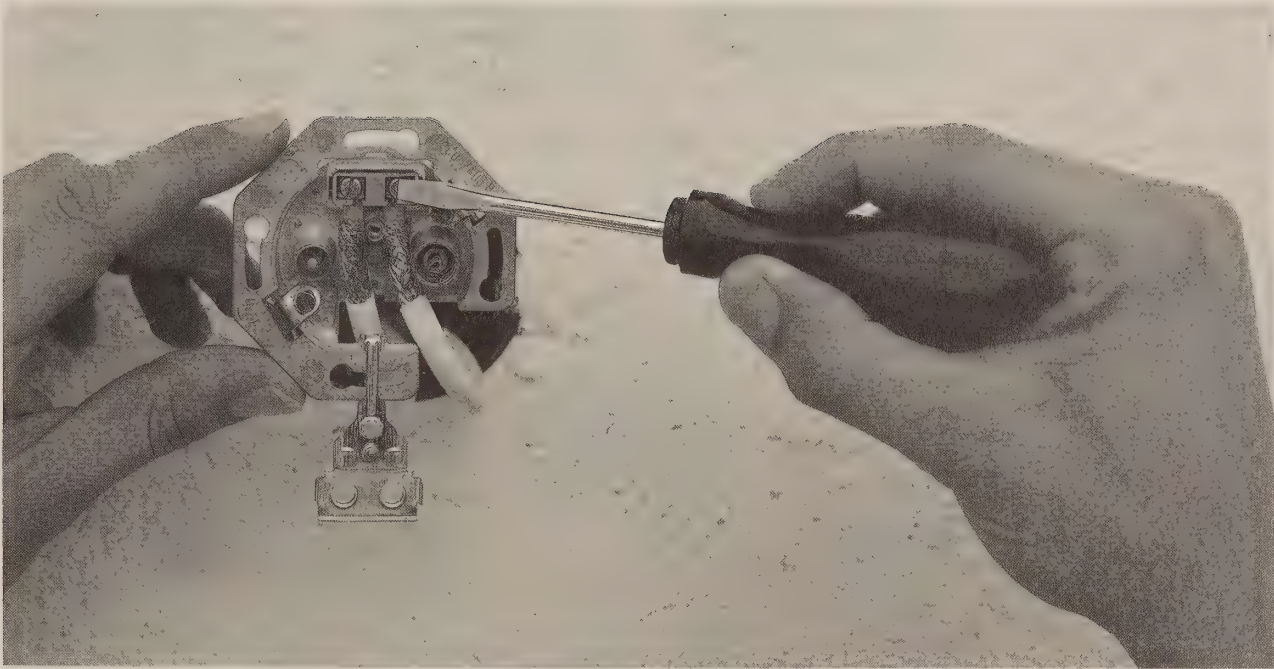
Cable fitting	Connecting piece	Cable fitting	Cable connections of	with
Muf 1	+ Muf 10	+ Muf 1	Koka 711, Koka 712	Koka 711, Koka 712
Muf 1	+ Muf 10	+ Muf 2	Koka 711, Koka 712	Koka 741, Koka 744
Muf 2	+ Muf 10	+ Muf 2	Koka 741, Koka 744	Koka 741, Koka 744

House Connecting Box

- ☐ CATV cable connecting box with built-in test point socket
- ☐ For the connection of CATV line coaxial cables (Type Koka 741) to indoor distribution coaxial cables (Type Koka 711)
- ☐ Housing made of die-cast aluminium
- ☐ Grounding screw for the connection of earth conductor with 10 mm²
- ☐ Coverplate with sealing ears
- ☐ Impedance: 75 Ω
- ☐ Frequency range: 5...450 MHz
- ☐ Throughpass attenuation: max. 0,5 dB
- ☐ Shielding range: 70dB
- ☐ Insulation between inner and outer conductor: 2 KV/50-60 Hz 10 sec.
- ☐ Dimensions: 80 x 80 x 47 mm
- ☐ Protection class: IP 54
- ☐ Incorporated bridging connector allows following switching possibilities:
 - 1) Input - Output
 - 2) Input - test socket
 - 3) Input - terminal resistor
 - 4) Output - test socket
- ☐ Possibility for insertion of overvoltage arrester Form H
- ☐ Cable connection by screws



Type	HCB 450 A
Ordering code	947 314-001

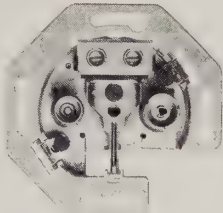
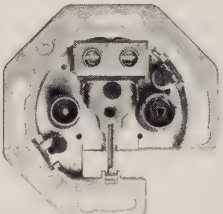


Outlet Sockets

☐ For the connection of radio and TV sets to community and individual antenna systems

☐ Two main groups of sockets:
1. Gedu series: sockets for loop-wired systems, decoupling circuits incorporated

2. Edu series: sockets for individual installations and for use in tap-off lines. No decoupling circuits incorporated

	Type Ordering code P.T.T. approval nr. Colour code		Features
Antenna Sockets for Loop-wired Systems	Gedu 2405 B 910 839-005 A 683 012 V white		Double outlet socket for one radio and one TV set with low output attenuation and high decoupling rate
	Gedu 2400 B 910 764-004 A 683 012 V		Double outlet socket for one radio and one TV set with incorporated directional coupler. Low throughpass attenuation. High decoupling rate. Suitable for reverse signal transmission. Reverse frequency range 4...26 MHz
	Gedu 2411 B 910 765-004 A 683 013 V blue		Double outlet socket for one radio and one TV set. Decoupling by transformer. For longer looped lines
	Gedu 2491 B 910 769-004 A 683 014 V red		Double outlet socket for one radio and one TV set with low throughpass attenuation and high output attenuation. For use in networks with high signal levels. Suitable for reverse signal transmission. Reverse frequency range 4...26 MHz.

☐ The antenna outlet sockets are preferably installed in flush mounting boxes of 55 mm diameter.

☐ For surface mounting distance frame Ar 20 is available
☐ Gedu sockets, installed as last one in a line must be terminated by terminal resistor R 75

☐ Shielding rate
up to 470 MHz ≥ 75 dB
470-862 MHz ≥ 65 dB

		AM	FM	VHF I	VHF III *LSC/**USC ***ESC	UHF IV/ V	Decoupling
Throughpass attenuation	dB	3-4	2	2	2	2,5	TV/TV between two outlets VHF > 40 dB, UHF > 30 dB radio/TV > 50 dB
Output attenuation	dB	11-8	7	6	6	6	
Throughpass attenuation	dB	1,2	0,8	0,8	0,8	0,8-1,2	TV/TV between two outlets > 50 dB radio/TV > 50 dB
Output attenuation	dB	15	15	14	14	15	
Throughpass attenuation	dB	0,8	0,8	0,8	0,8	0,8	radio/TV ≥ 50 dB TV/TV ≥ 26 dB
Output attenuation	dB	14,5	14	13,5	13,5	13,5	
Throughpass attenuation	dB	0,8	0,8	0,8	0,8	0,8-1,0	radio/TV ≥ 50 dB TV/TV ≥ 50 dB
Output attenuation	dB	26	26	26	26	26	

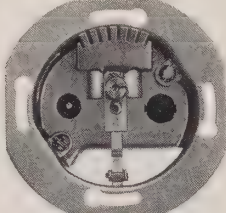
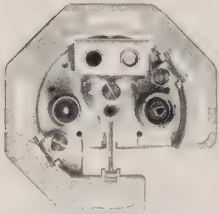
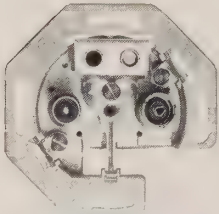
* LSC = Lower special channels 125...174 MHz ** USC = Upper special channels 230...300 MHz *** ESC = Extended special channels 302-470 MHz

Outlet Sockets

□ For the connection of radio and TV sets to community and individual antenna systems

□ Two main groups of sockets:
1. Gedu series: sockets for loop-wired systems, decoupling circuits incorporated

2. Edu series: sockets for individual installations and for use in tap-off lines. No decoupling circuits incorporated

	Type		Features
Antenna Sockets for Individual Installations and Tap-off Lines	Ordering code		
	P.T.T. approval nr.		
	Colour code		
	Edu 1401 A		Single outlet socket for the connection of one TV set.
	962 748-001		
	Edu 2402 B		Double outlet socket for one radio and one TV set.
	910 853-004		
	A 683 006 V		
	black		
	Edu 2404 BR		Double outlet for radio and TV. With incorporated directional coupler. For use in CATV systems with reverse signal transmission. Reverse frequency range 4...26 MHz.
	910 910-005		
	A 683 007 V		
	black		

☐ The antenna outlet sockets are preferably installed in flush mounting boxes of 55 mm diameter.

☐ For surface mounting distance frame Ar 20 is available
☐ Gedu sockets, installed as last one in a line must be terminated by terminal resistor R 75

☐ Shielding rate
up to 470 MHz ≥ 75 dB
470-862 MHz ≥ 65 dB

		AM	FM	VHF I	VHF III *LSC/**USC ***ESC	UHF IV/ V	Decoupling
Throughpass attenuation	dB	-	-	-	-	-	-
Output attenuation	dB	-	-	0,2	0,2	0,5	-
Throughpass attenuation	dB	-	-	-	-	-	Internal between radio and TV outlet > 24 dB
Output attenuation	dB	0,5-2	1,0	0,8	2-0,5	0,5	
Throughpass attenuation	dB	-	-	-	-	-	Internal between: FM and VHF I > 27 dB FM and VHF III > 33 dB FM and UHF > 22 dB
Output attenuation	dB	3-6	6	2,5 feeding-in attenuation of reverse of signals 4.0dB/26 MHz	2,5	3,0	

* LSC = Lower special channels 125...174 MHz ** USC = Upper special channels 230...300 MHz *** ESC = Extended special channels 302-470 MHz

Terminal Resistor

☐ 75 Ω terminal resistor for
insertion into Gedu sockets

when these are installed as
last one in a line



Type	R 75
Ordering code	910 760-000

Covering Plates and
Distance Frame

Covering Plates

☐ Consisting of covering frame
and central disc

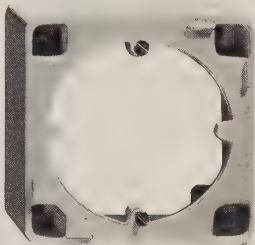
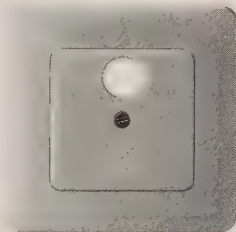
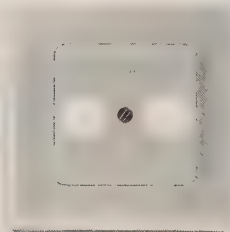
☐ Made from ivory plastic
☐ Fixing by centre screw

Distance Frame

☐ For surface mounting of
outlet sockets

☐ Cover plate for double outlet
socket
☐ Outer dimensions: 81 x 81 mm
☐ Central disc: 50 x 50 mm

☐ Cover plate for single outlet
socket
☐ Outer dimensions: 81 x 81 mm
☐ Central disc: 50 x 50 mm



Type	Ad 350	Ad 450	Ar 20
Ordering code	910 460-001	910 476-001	910 382-001

Connecting Cords with
Coaxial Connectors

☐ For the connection of either
radio or TV sets to antenna
outlet sockets

☐ Coaxial connectors to
IEC 169-2
☐ Colour white



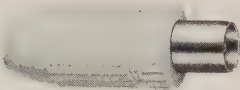
Type	Fekab 751/150	Fekab 751/300
Ordering code	910 957-001	910 957-002
P.T.T. approval nr.	A 683 025 U	A 683 026 U
Length	1,5 m	3 m
Shielding rate	up to 470 MHz \geq 75 dB 470-862 MHz \geq 65 dB	up to 470 MHz \geq 75 dB 470-862 MHz \geq 65 dB

Coaxial Connectors
to IEC 169-2
(DIN 45 325)

For more details to these
connectors ask for our
components Hirschmann-
Catalogue DS 4

Coaxial plug

- ☐ For the connection of coaxial
cables with outer diameter of up
to 7,8 mm
- ☐ Colour of plastic housing black
or white
- ☐ Shielding rate: up to 470 MHz
≥ 75 dB, 470-862 MHz ≥ 70 dB



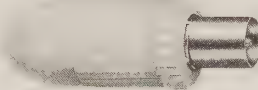
Coaxial plug, female

- ☐ For the connection of coaxial
cables with outer diameter of up
to 7,8 mm
- ☐ Colour of plastic housing black
or white
- ☐ Shielding rate: up to 470 MHz
≥ 75 dB, 470-862 MHz ≥ 70 dB



Coaxial plug

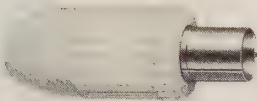
- ☐ Screw connection for inner
conductor of coaxial cable
- ☐ For cables with outer diameter
of up to 7,8 mm
- ☐ Colour of plastic housing black
or white
- ☐ Shielding rate 45 dB



Type	Kos 1	Kok 1	Kos 3
P.T.T. approval nr.	A 683 072 V	A 683 073 V	-

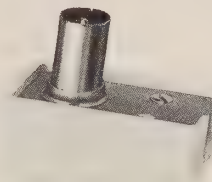
Coaxial plug, female

- ☐ Screw connection for inner
conductor of coaxial cable
- ☐ For cables with outer diameter
of up to 7,8 mm
- ☐ Colour of plastic housing black
or white
- ☐ Shielding rate 45 dB



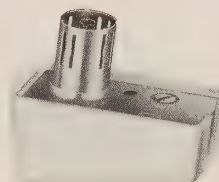
Coaxial angle plug

- ☐ Screw connection for inner
conductor of coaxial cables
- ☐ White plastic housing
- ☐ Shielding rate: 30 dB
- ☐ To be used with connection
cords only



Coaxial angle plug, female

- ☐ Screw connection for inner
conductor of coaxial cables
- ☐ White plastic housing
- ☐ Shielding rate: 30 dB
- ☐ To be used with connection
cords only



Type	Kok 3	Koswi 1	Kokwi 1
------	-------	---------	---------

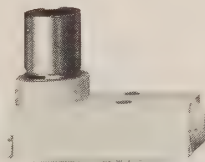
Coaxial angle plug

- ☐ Screw connection for inner
conductor of coaxial cables
- ☐ White plastic housing
- ☐ Shielding rate: 40 dB
- ☐ To be used with connecting
cords only



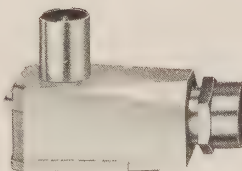
Coaxial angle plug, female

- ☐ Screw connection for inner
conductor of coaxial cables
- ☐ White plastic housing
- ☐ Shielding rate: 40 dB
- ☐ To be used with connecting
cords only

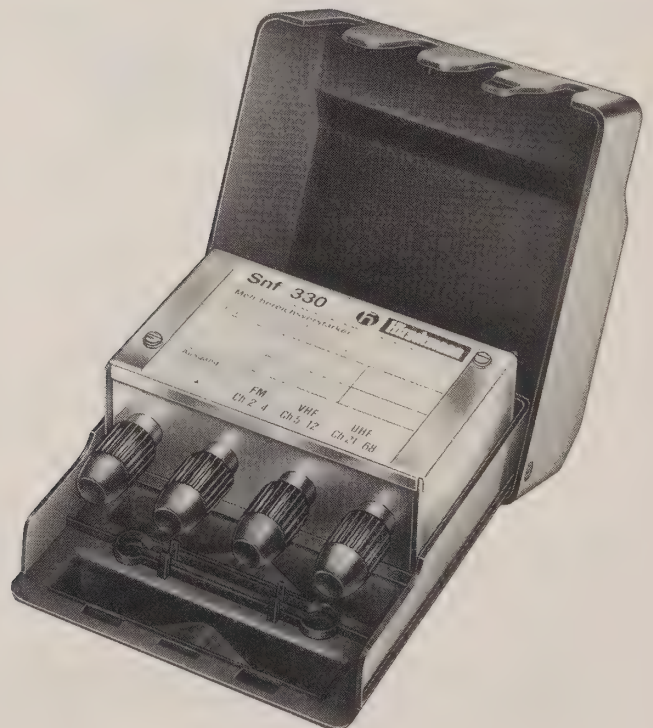
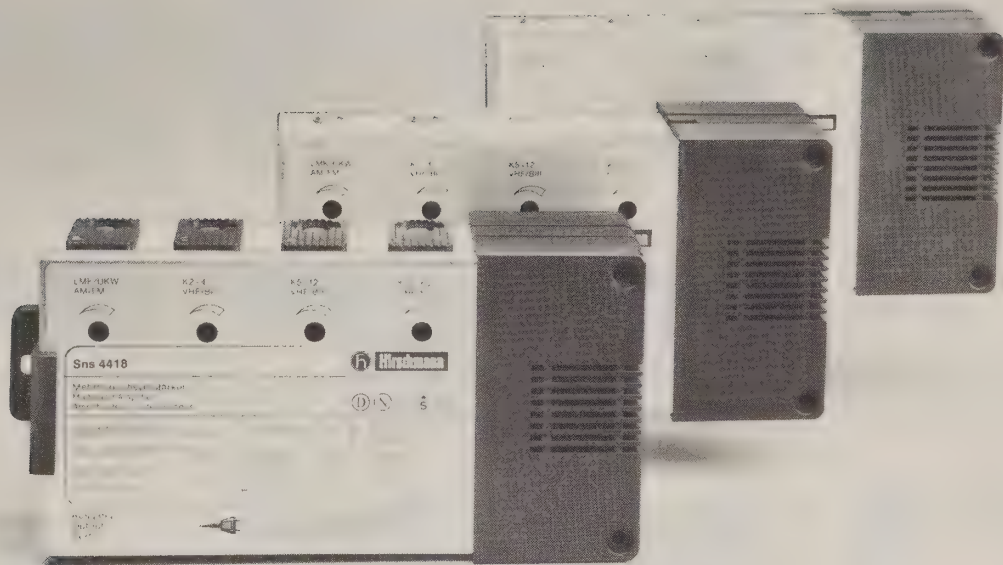


Coaxial angle plug

- ☐ All-metal housing, nickel
plated
- ☐ For coaxial cables with outer
diameter of up to 9,5 mm
- ☐ Shielding rate: ≥ 75 dB



Type	Koswi 300	Kokwi 300	Koswi 100
P.T.T. approval nr.	-	-	A 683 074V



Multiband Amplifiers for Small and Medium Sized Community Antenna Systems Sbe-Series

- ☐ The Sbe-Series are the high quality export programme of multiband amplifiers
- ☐ Shielded metal housing
- ☒ For indoor installation only
- ☐ Cable connection by coaxial plugs to IEC 169-2 (Kos 1) which are supplied with

- ☐ Built-in power supply unit electronically stabilized and short circuit proof
- ☐ With terminal screw for remote feeding voltage + 24 V D.C. to pre-amplifiers
- ☐ Adjustable attenuators for FM, VHF I, VHF III and UHF -18 dB each, for AM -30 dB

- ☐ Wide range of applications by possibility of direct plugging-in of active modules
- ☐ Length of mains connection cord 1 m
- ☐ Dimensions: 300 x 135 x 80 mm



Type Ordering code			AM	FM	VHF I Ch 2-4	VHF III Ch 5-12	UHF Ch 21-60	Power consumption
Sbe 440 962 261-001	Gain	dB	-	29	30	30	30	8 Watt,
	Max. output level	dBμV	-	115	115	115	115	full load 16 W
	Noise figure	dB	-	8	8	7,5	8	
Sbe 440/8 962 261-002	Gain	dB	28	29	30	30	30	8 Watt,
	Max. output level	dBμV	111	115	115	115	115	full load 16 W
	Noise figure	dB	-	8	8	7,5	8	
Sbe 450 962 262-001	Gain	dB	-	35	34	34	35	13 Watt,
	Max. output level	dBμV	-	118	118	118	118	full load 16 W
	Noise figure	dB	-	8	8	7,5	9	
Sbe 450/8 962 262-002	Gain	dB	28	35	34	34	35	13,5 Watt,
	Max. output level	dBμV	111	118	118	118	118	full load 16 W
	Noise figure	dB	-	8	8	8	9	
Sbe 471 962 264-001	Gain	dB	-	42	42	42	42	13 Watt,
	Max. output level	dBμV	-	119	119	119	119	full load 16 W
	Noise figure	dB	-	7	7	7	8	
Sbe 471/8 962 264-002	Gain	dB	28	42	42	42	42	13,5 Watt,
	Max. output level	dBμV	111	119	119	119	119	full load 16 W
	Noise figure	dB	-	7	7	7	8	

Maximum supply current for active plug-in modules for Sbe 440 = 220 mA
Maximum supply current for active plug-in modules for Sbe 450/471 = 100 mA

Multiband Amplifiers for
Small and Medium sized
Community Antenna
Systems Sns and Skl-
Series

- ☐ Shielded metal housing with
incorporated power supply unit
- ☐ For indoor installation only
- ☐ Cable connection by coaxial
plugs to IEC 169-2
- ☐ Meet specifications to
German P.T.T.
- ☐ Length of mains connecting
cord 1 m

- ☐ Shielding rate:
up to 470 MHz ≥ 75 dB
470-790 MHz ≥ 65 dB

Type

Ordering code

P.T.T. approval nr.

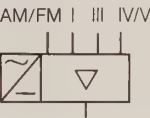
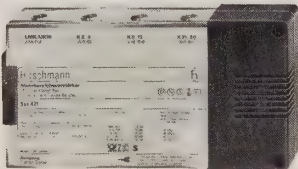
Symbol

Features

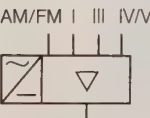
Sns 321
944 431-101
A 683 098 V S



Sns 421
944 566-101
A 675 034 U S

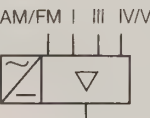
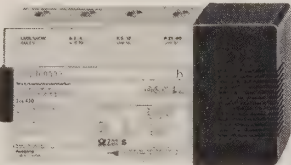


Sns 425
944 589-002
A 675 020 U S



Power supply unit electronically
stabilized and short circuit proof.
Possibility of direct plugging-in of
active modules to input B III and
B IV/V.
Max. supply current 60 mA.

Sns 430
944 394-101
A 675 033 U S





Typical features of **Sns** amplifiers:

- ☐ Standard programme for economical installations
- ☐ Coaxial plugs Kos 1 for cable

connection to be ordered separately

- ☐ No possibility for direct connection of pre-amplifiers

Typical features of **Skl** amplifiers:

- ☐ Advanced programme of amplifiers with high output levels
- ☐ Wide range of application by possibility of direct plugging-in

of active modules

- ☐ Power supply unit electronically stabilized and short circuit proof
- ☐ With terminal screw for remote feeding voltage to pre-amplifiers

		AM	FM	VHF I Ch 2-4	VHF III Ch 5-12	UHF IV/ V Ch 21-60	Power consumption at 220 V~	Dimensions
Gain	dB	-	20	-	20	20	4 W	159 x 106 x 45 mm
Max. output level	dB μ V	-	108	-	108	108		
Noise figure	dB	-	7	-	7	7		
Gain	dB	-1,5	20	20	20	20	4 W	212 x 106 x 45 mm
Max. output level	dB μ V	-	108	108	108	108		
Noise figures	dB	-	7	7	7	7		
Gain	dB	-1,5	20	20	20	20	4 W, full load 5,5 W	212 x 106 x 45 mm
Max. output level	dB μ V	-	108	108	108	108		
Noise figure	dB	-	7	7	7	7		
Gain	dB	-1,5	27	27	27	27	4 W	220 x 106 x 65 mm
Max. output level	dB μ V	-	108	108	108	108		
Noise figure	dB	-	7	7	7	7,5		

Blue bars indicate bands amplified.
/ Input with adjustable attenuator.

Consider reduction of output level in case of multichannel operation (see reduction chart page 104).

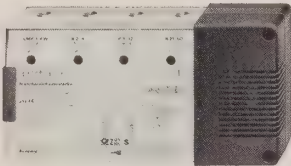
Multiband Amplifiers for
Medium sized Community
Antenna Systems Sns
and Ski-Series

- ☐ Shielded metal housing with incorporated power supply unit
- ☒ For indoor installation only
- ☐ Cable connection by coaxial plugs to IEC 169-2
- ☐ Meet specifications to German P.T.T. (ZZF approval)
- ☐ Length of mains connecting cord 1 m

- ☐ Shielding rate:
up to 470 MHz ≥ 75 dB
470-790 MHz ≥ 65 dB

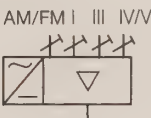
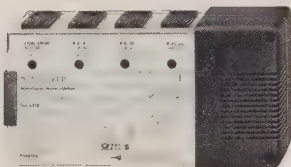
Type	Symbol	Features
Ordering code		
P.T.T. approval nr.		

Sns 441
944 580-101
A 675 032 U S



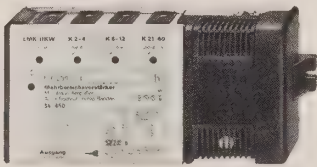
Adjustable attenuators for FM, VHF I, VHF III and UHF -18 dB each.

Sns 4418
944 429-101
A 675 031 U S



Adjustable attenuators for FM, VHF I, VHF III and UHF -18 dB each.
Max. supply current for active modules 50 mA.

Ski 450
944 466-003
A 683 051 U S



Adjustable attenuators for FM, VHF I, VHF III and UHF -18 dB each, for AM -30 dB.
Max. supply current for active modules 100 mA.

Typical features of **Sns** amplifiers:

- ☐ Standard programme for economical installations
- ☐ Coaxial plugs Kos 1 for cable

connection to be ordered separately

- ☐ No possibility for direct connection of pre-amplifiers

Typical features of **SkI** amplifiers:

- ☐ Advanced programme of amplifiers with high output levels
- ☐ Wide range of application by possibility of direct plugging-in

of active modules

- ☐ Power supply unit electronically stabilized and short circuit proof
- ☐ With terminal screw for remote feeding voltage to pre-amplifiers

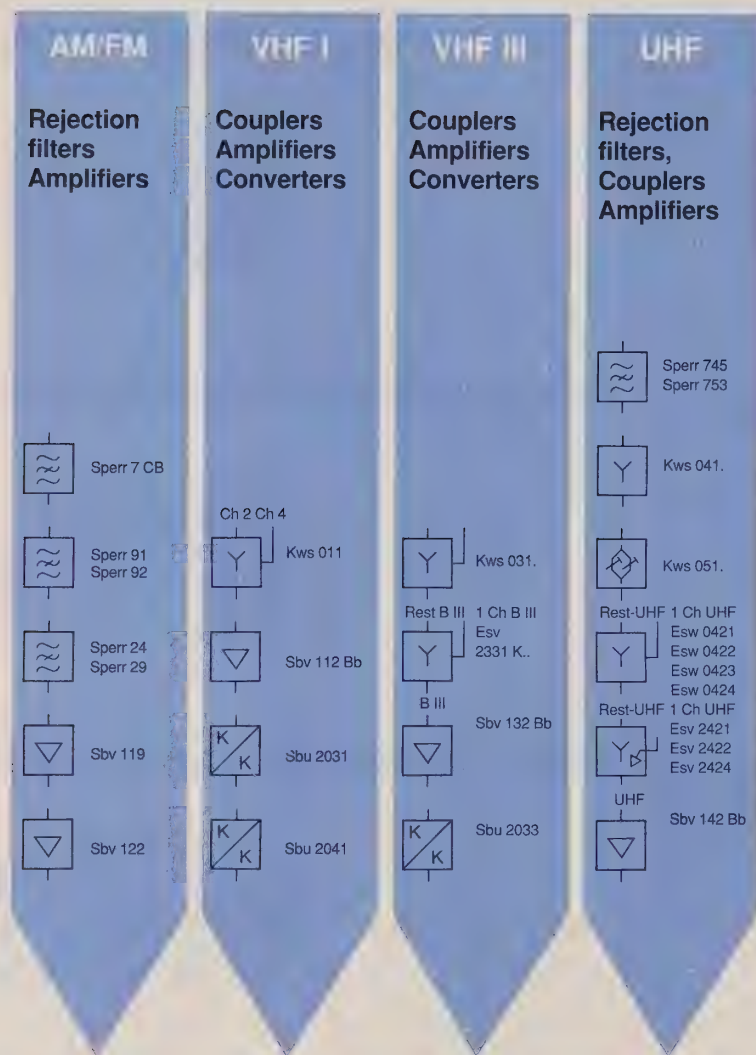
		AM	FM	VHF I Ch 2-4	VHF III Ch 5-12	UHF Ch 21-60	Power consumption at 220 V~	Dimensions
Gain	dB	-1,5	27	27	27	27	4 W	220 x 106 x 65 mm
		-	108	108	108	108		
		-	7	7	7	7,5		
Max. output level	dBμV	-	108	108	108	108		
Noise figure	dB	-	7	7	7	7,5		
Gain	dB	20	27	27	27	27	4,5 W, full load 5,5 W	220 x 106 x 65 mm
		108	108	108	108	108		
		-	7	7	7	7,5		
Max. output level	dBμV	108	108	108	108	108		
Noise figure	dB	-	7	7	7	7,5		
Gain	dB	26	34	34	33	34	12 W, full load 16 W	300 x 135 x 80 mm
		111	116	116	116	116		
		-	8,5	8,5	9	10		
Max. output level	dBμV	111	116	116	116	116		
Noise figure	dB	-	8,5	8,5	9	10		

Blue bars indicate bands amplified.
 ⤴ Input with adjustable attenuator.

Consider reduction of output level in case of multichannel operation (see reduction chart page 104).

**The System of
Pluggable Modules**

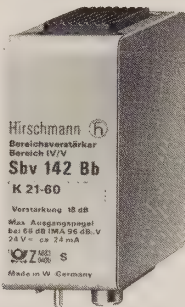
For use in combination with
multiband amplifiers



Pluggable Modules-Active

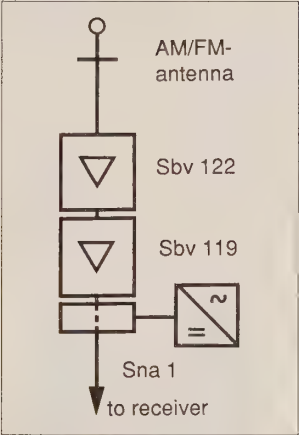
- ☐ Wide range of applications in combination with multiband amplifiers and further active and passive modules
- ☐ For direct plugging into inputs of multiband amplifiers
- ☐ For use together with modules of Top-series or Sns amplifiers adapter Sna 1 or Sa 1 are available (see page 65)
- ☐ 24 V D.C. connection is automatically made when modules are plugged-in to inputs of multiband amplifiers or Sna 1/Sa 1 adapters
- ☐ HF-connection by coaxial connectors to IEC 169-2 (DIN 45 325)
- ☐ All modules in shielded metal housings
- ☐ Additional fixing brackets Bw 5 for surface mounting available (see page 31)

Band Amplifiers Sbv-Series



- ☐ Shielding rate: ≥ 75 dB (Sbv 119, Sbv 122, Sbv 112 Bb, Sbv 132 Bb)
- ☐ ≥ 65 dB (Sbv 142 Bb)
- ☐ Dimensions: 70 x 90 x 35 mm

Example of application

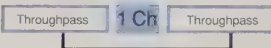
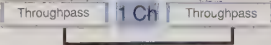
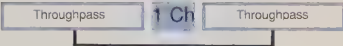
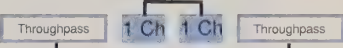
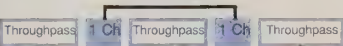
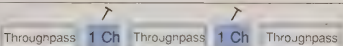


Type Ordering code P.T.T. approval nr.		AM	FM	VHF I Ch 2-4	VHF III Ch 5-12	UHF Ch 21-60	Current
Sbv 119* 944 540-502 A 683 036 U	Gain Max. output level	15 100	-1 -				12 mA
Sbv 122 944 539-502 A 683 037 U S	Gain Max. output level Noise figure	-0,5 - -	19 100 2,5				12 mA
Sbv 112 Bb 944 461-502 A 683 038 U S	Gain Max. output level Noise figures			16,5 96 4			20 mA
Sbv 132 Bb 944 462-502 A 683 039 U S	Gain Max. output level Noise figures				16,5 96 4,5		20 mA
Sbv 142 Bb* 944 460-502 A 683 040 U S	Gain Max. output level Noise figures					20 100 6	24 mA

*Supply voltage continued to D.C. input socket for connection of further active modules.
Blue bars indicate amplified frequency range.



- ☐ Modules with two inputs, one on front panel and one on top side
- ☐ Front panel input: for low noise amplification of one or two fed-in channels
- ☐ Top side input: for through-pass of non-amplified channels. In case of Esv 2321 one selective channel only
- ☐ Mechanical construction and electrical features allow cascading of two or more modules
- ☐ Decoupling between inputs: ≥ 20 dB
- ☐ Minimum channel distance between inputs one channel
- ☐ Please specify amplified channels when ordering
- ☐ Shielding rate ≥ 75 dB (Esv 2320, Esv 2331) ≥ 65 dB (Esv 2421, Esv 2422, Esv 2424, Esv 3421)
- ☐ Dimensions 70 x 90 x 35 mm

Type		VHF III	UHF IV/V	Current
Ordering code		Ch 5-12	Ch 21-60	
P.T.T. approval nr.				
Esv 2320 K 7 944 591-807				10 mA
Esv 2320 K 8 944 591-808	Gain	dB	-1 21 -1	
A 683 001 U S	Max. output level	dBμV	- 106 -	
	Noise figures	dB	- 3 -	
Esv 2331 K.. see table				10 m
A 683 043 U S	Gain	dB	-1 21 -1	
	Max. output level	dBμV	- 106 -	
	Noise figure	dB	- 3 -	
Esv 2421 K21-60 944 595-621...600				10 mA
A 683 041 U S	Gain	dB	- 17 -	
	Max. output level	dBμV	- 106 -	
	Noise figure	dB	- 4,5 -	
Esv 2422 K.. + K.. see table				10 mA
A 683 021 U S	Gain	dB	-1 17 17 -1	
	Max. output level	dBμV	- 97 97 -	
	Noise figure	dB	- 4,5 4,5 -	
Esv 2424 K.. + K.. see table				22 mA
A 683 042 U S	Gain	dB	-1 17 -1 17 -1	
	Max. output level	dBμV	- 106 - 106 -	
	Noise figure	dB	- 4,5 - 4,5 -	
Esv 3421 K.. + K.. see table				22 mA
A 693 002 U S	Gain	dB	-1 17 -1 17 -1	
	Max. output level	dBμV	- 106 - 106 -	
	Noise figure	dB	- 4 - 4 -	

Feed-in channel	Ordering code	Feed-in channel	Ordering code
Ch 5	944 594-605	Ch 10	944 594-610
Ch 6	944 594-606	Ch 11	944 594-611
Ch 9	944 594-609	Ch 12	944 594-612

Available channel combination Esv 2422

Feed-in channels	Ord. code
Ch 31 + K 34	944 596-601
Ch 35 + K 42	-602
Ch 37 + K 40	-603
Ch 41 + K 45	-604
Ch 43 + K 46	-605
Ch 46 + K 49	-606
Ch 50 + K 56	-607
Ch 42 + K 48	-608
Ch 49 + K 55	-609
More channel combinations on request	

Available channel combination Esv 2424

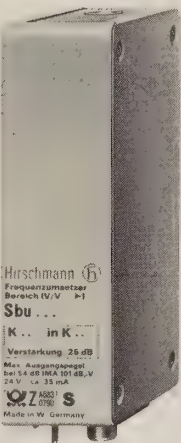
Feed-in channel	Ord. code
Ch 22 + K 57	944 597-601
Ch 24 + K 46	-602
Ch 24 + K 59	-621
Ch 26 + K 54	-603
Ch 27 + K 57	-604
Ch 28 + K 39	-701
Ch 29 + K 56	-605
Ch 30 + K 60	-606
Ch 31 + K 42	-607
Ch 32 + K 42	-609
Ch 32 + K 45	-610
Ch 33 + K 40	-611
Ch 33 + K 46	-612
Ch 33 + K 58	-613
Ch 34 + K 51	-614
Ch 34 + K 59	-615

Available channel combination Esv 3421

Feed-in channel	Ord. code
Ch 25 + K 51	944 581-801
Ch 27 + K 60	-802
Ch 31 + K 51	-803
Ch 46 + K 51	-853
Ch 49 + K 60	-854
Ch 51 + K 58	-852
Ch 51 + K 60	-851
More channel combinations on request	

Pluggable Converter Modules Sbu Series

The Sbu series are the high quality export programme of pluggable converters



Combination of converters

For the operation of up to three converter modules with output channels in the same frequency range, a combining unit Vms 0631 is available

The example shows combination of two Sbu converters with output in VHF III plugged into Vms 0631



Type	Sbu 2013 K../K..	Sbu 2031 K../K..	Sbu 2033 K../K..
Ordering code	962 429-...	962 428-...	962 427-...
Conversion of 1 channel, band	I → III	III → I	III → III
Gain	dB 25	25	25
Max. output level	dBμV 101	101	101
Noise figures	dB 4	3	3
Current	mA 33	33	33

Type	Sbu 2041 K../K..	Sbu 2043 K../K..
Ordering code	962 403-...	962 404-...
Conversion of 1 channel, band	UHF → I	UHF → III
Gain	dB 25	25
Max. output level	dBμV 101	101
Noise figures	dB 6	6
Current	mA 35	35

Conversion possibilities are stated on following page.
When ordering please state channel combination.

Channel Conversion
Chart for Sbu Series

In the following charts an index is stated for every possible conversion. When ordering please complete ordering code by the index shown in the chart.

Example: Conversion
channel 22 into channel 4
=Sbu 2041/K 22/K 4
ordering code 962 403-106

Conversion:
VHF III → VHF I
Sbu 2031 K../K..

	output channel	input channel							
		5	6	7	8	9	10	11	12
	2	101	103	105	-	-	110	113	-
	3	-	104	106	107	108	111	114	-
	4	102	-	-	-	109	112	115	116

- no conversion possible

Conversion UHF → VHF I

Sbu 2041 K../K..

Ordering code:
962 403-...

	output channel	input channel																	
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	2	101	104	107	110	113	116	119	122	125	128	131	134	137	140	143	146	149	152
	3	102	105	108	111	114	117	120	123	126	129	132	135	138	141	144	147	150	153
	4	103	106	109	112	115	118	121	124	127	130	133	136	139	142	145	148	151	154
	output channel	input channel																	
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
	2	161	164	167	170	173	176	179	182	185	188	191	194	197	200	203	206	209	212
	3	162	165	168	171	174	177	180	183	186	189	192	193	198	201	204	207	210	213
	4	163	166	169	172	175	178	181	184	187	190	193	196	199	202	205	208	211	214

Conversion UHF → VHF III

Sbu 2043 K../K..

Ordering code:
962 404-...

	output channel	input channel																	
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
	5	101	108	116	124	132	140	-	-	-	169	-	183	189	195	201	207	214	220
	6	102	109	117	125	133	141	148	155	162	-	-	-	-	196	202	208	215	221
	7	103	-	118	126	134	142	149	156	163	170	177	-	-	-	-	209	216	222
	8	104	111	119	-	135	143	150	157	164	171	178	184	190	-	-	-	-	229
	9	105	112	120	128	136	-	151	158	165	172	179	185	191	197	203	210	-	-
	10	106	113	121	129	137	145	152	-	-	173	180	186	192	198	204	211	217	223
	11	107	114	122	130	138	146	153	160	167	-	-	187	193	199	205	212	218	224
	12	-	115	123	131	139	147	154	161	168	175	182	-	-	200	206	213	219	225
	output channel	input channel																	
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
	5	238	244	250	256	262	268	274	281	288	-	-	309	317	324	331	338	346	353
	6	239	245	251	257	263	269	275	282	289	295	302	310	-	-	-	339	347	354
	7	240	246	252	258	264	270	276	283	290	296	303	311	318	325	332	340	-	362
	8	241	247	253	259	265	271	277	284	291	297	304	312	319	326	333	341	348	355
	9	-	248	254	260	266	272	278	285	292	298	305	313	320	327	334	342	349	356
	10	-	-	-	-	267	273	279	286	293	299	306	314	321	328	335	343	350	357
	11	242	-	-	-	-	-	280	287	294	300	307	315	322	329	336	344	351	358
	12	243	249	255	261	-	-	-	-	-	301	308	316	323	330	337	345	352	359

- no conversion possible
conversion channel 61-69 on request!

Conversion
Band I → Band III

 Sbu 2013 K../K..
 Ordering code:
 948 286-...

		input channel							
		2	3	4					
output channel	5	101	-	112					
	6	102	106	-					
	7	103	107	-					
	8	-	108	-					
	9	-	109	113					
	10	104	110	114					
	11	105	111	115					
	12	-	-	116					

- no conversion possible

Conversion
Band III → Band III

 Sbu 2033 K../K..
 Ordering code:
 948 277-...

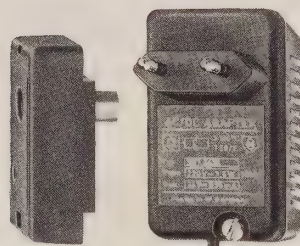
		input channel							
		5	6	7	8	9	10	11	12
output channel	5	-	-	-	114	116	-	122	127
	6	-	-	-	-	117	121	123	128
	7	-	-	-	-	-	-	124	129
	8	102	-	-	-	-	-	125	-
	9	103	106	-	-	-	-	-	130
	10	-	107	-	-	-	-	-	-
	11	104	108	112	115	-	-	-	-
	12	105	109	113	-	120	-	-	-

- no conversion possible

Adapters
☐ For the voltage supply of
active pluggable modules

**Adapter with power
supply unit**

- ☐
- Adapter with power supply unit
-
- incorporated in mains connecting
-
- plug
-
- ☐
- For operating active pluggable
-
- modules in combination with
-
- multiband amplifiers of
-
- Sns series or Top system



- ☐
- With terminal screw allowing
-
- connection of further Sa 1
-
- adapters
-
- ☐
- Mains connection 220 V A.C./
-
- 50-60 Hz
-
- ☐
- Power consumption 1,5 W
-
- ☐
- Operational voltage
-
- + 24 V D.C.
-
- ☐
- Current 35 mA

**Adapter without supply
unit**

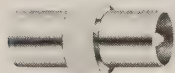
- ☐
- Terminal screw for the con-
-
- nection of + 24 V D.C. supply
-
- voltage
-
- ☐
- Shielding rate:
-
- up to 470 MHz ≥ 75 dB
-
- 470-862 MHz ≥ 65 dB



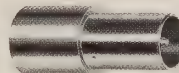
Type	Sna 1	Sa 1
Ordering code	944 470-002	944 473-002
P.T.T. approval nr.	A 683 033 V	A 683 034 V

Adapter

- ☐
- Adapter socket to socket to
-
- DIN 45 325
-
- ☐
- Shielding rate:
-
- up to 470 MHz ≥ 75 dB
-
- 470-862 MHz ≥ 65 dB



- ☐
- Shielding rate:
-
- up to 470 MHz ≥ 75 dB
-
- 470-862 MHz ≥ 65 dB
-
- ☐
- For plug-in-modules to Multi-
-
- band Amplifiers of Ske/Sks-
-
- series



Type	Kvs 1	Sb 1
Ordering code	947 194-001	944 487-001
P.T.T. approval nr.	A 683 035 V	A 683 036 V

Combining Units

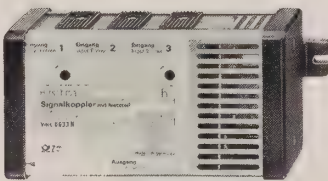
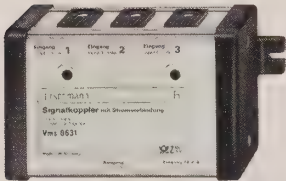
- ☐ For the operation of up to three active modules with output channels in the same frequency range and adjustable attenuators at input 1 and 3
- ☐ Throughpass attenuation 47...868 MHz ≤ 6 dB
☐ Decoupling between inputs ≥ 20 dB
- ☐ Shielding rate up to 470 MHz ≥ 75 dB
470-862 MHz ≥ 65 dB

Vms 0631

- ☐ Screened metal housing
- ☐ Cable connection to output socket by coaxial plug Kos 1 which must be ordered separately
- ☐ 24 V D.C. connection is automatically made when modules are plugged-in
- ☐ Terminal screw for the connection of + 24 V D.C. supply voltage
- ☐ Dimensions 187 x 100 x 70 mm

Vms 0633 N

- ☐ Similar to Vms 0631 but with built-in power supply unit (220 V/50-60 Hz) and adjustable attenuators at input 1 and 3
- ☐ Supply voltage +24 V D.C.
- ☐ Current 105 mA max.
- ☐ Mains power consumption 8W
- ☐ Dimensions 225 x 100 x 70 mm



Type	Vms 0631	Vms 0633 N
Ordering code	947 271-003	947 292-002
P.T.T. approval nr.	A 683 042 V	A 683 043 V



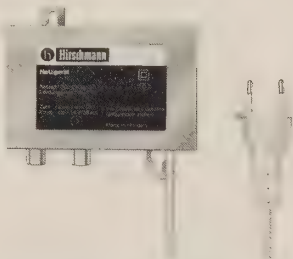
Pre-Amplifiers



- ☐ Remote-fed multiband amplifiers for mast installation
- ☐ Preferably for individual installations and rotating antenna arrays
- ☐ Completely shielded, weather-proof housing
- ☐ Shielded cable connection provided
- ☐ No connecting plugs required
- ☐ Mast fixing clamp Sno-U 40 to be ordered separately
- ☐ Remote feeding by power supply unit Snn 250
- ☐ Dimensions: 130 x 115 x 70 mm

Type	Snf 330			
Ordering code	944 573-001			
Frequency range	MHz	47-104	174-230	470-860
Gain	dB	22	22	23
Max.output level	dBµV	100	98	102
Noise figure	dB	2,6	2,7	3,3
Remote feeding supply voltage	V	+13/30 mA		
Features	Low noise type			

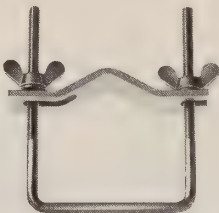
Short-circuit proof Power supply unit for remote feeding of Snf Amplifiers



- ☐ Mains supply 200-240 V A.C. 50/60 Hz
- ☐ Length of mains connecting cord 1 m
- ☐ Power consumption: 2W
- ☐ Operating voltage: +13 V D.C.
- ☐ Supply current: 30 mA
- ☐ Metal housing
- ☐ Radiation proof, for indoor installation only
- ☐ Connection of coaxial cable by plugs Kos 1 which are to be ordered separately

Type	Snn 250
Ordering code	944 399-001

Mast Fixing Clamp for Snf Amplifiers



Type	Sno-U 40
Ordering code	844 572-000

Pre-Amplifier Set



- ☐ Pre-amplifier-set consisting of
- Amplifier Snf 330
- Power supply unit Snn 250
- Mast fixing clamp Sno-U 40
- ☐ All components packed in one coloured box

Type	APS 330
Ordering code	944 574-001

Pre-Amplifiers Mvr and Mvf Series

☐ Destined for the use in fringe areas, especially in combination with amplifier and converter



modules for increasing low signal levels and improving the signal-to-noise ratio

- ☐ Remote-fed pre-amplifiers preferably for mast installation
- ☐ Supply of operating voltage through the download cable from the input socket of either Top amplifier modules or a remote power supply source (Sng 2480)
- ☐ Completely shielded and weatherproof housing
- ☐ **Independent D.C. polarity** allows use with Top

amplifier modules or Sbe multi-band amplifiers

- ☐ Cable connection by coaxial plugs Kos 1 which are supplied with
- ☐ Meet specifications to German P.T.T.
- ☐ Shielding rate ≥ 75 dB (Mvr 131, Mvr 132) ≥ 65 dB (Mvr 241, Mvr 242, Mvr 240 Bs)
- ☐ For masts up to 60 mm \varnothing
- ☐ Dimensions: 130 x 115 x 70 mm

Type Ordering code P.T.T. approval nr.		AM	FM	VHF I Ch 2-4	VHF III Ch 5-12	UHF Ch 21-60	Remote feeding supply voltage
Mvr 131 K 5...K 12 944 423-105...112 A 683 076 U S	Gain dB Max. output level dB μ V Noise figure dB						24 V/ 11 mA
Mvr 132 K 5+7 944 472-002 A 683 047 U S	Gain dB Max. output level dB μ V Noise figure dB						24 V/ 11 mA
Mvr 241 K 21...K 60 944 560-121...160 A 683 077 U S	Gain dB Max. output level dB μ V Noise figure dB						24 V/ 15 mA
Mvr 242 K...+ K.. 944 598-... A 683 070 U S	Gain dB Max. output level dB μ V Noise figure dB						24 V/ 15 mA
Mvr 240 Bs 944 557-002 A 683 071 U S	Gain dB Max. output level dB μ V Noise figure dB						24 V/ 24 mA

Blue bars indicate bands or channels to be amplified. Bars connected by black lines represent one input.
When ordering please state channel to be amplified.

Pre-Amplifiers with Automatic Gain Control Mkr Series



- ☐ Extremely low-noise pre-amplifiers with automatic gain control. For fringe areas with fluctuating input signal levels
- ☐ Preferably to be used together with multiband amplifiers of the Sbe series
- ☐ Remote-fed pre-amplifiers for mast installation
- ☐ Shielded and weather-proof housing
- ☐ Single polarity +24 V D.C.
- ☐ Cable connection by coaxial plugs Kos 1 which are supplied with
- ☐ Shielding rate: 51 dB
- ☐ Dimensions: 130 x 115 x 70 mm

Type Ordering code		VHF I CH 2-4	VHF III Ch 5-12	UHF CH 21-60	Remote feeding supply voltage
Mkr 211 K... 944 576-...	Gain dB AGC output level dBμV AGC range dB Noise figure dB Minimum input level for AGC operation dBμV	21 82 -25 2,5 61			+24 V D.C. 22 mA
Mkr 233 K... 944 570-...	Gain dB AGC output level dBμV AGC range dB Noise figure dB Minimum input level for AGC operation dBμV		21 83 -25 2,5 62		+24 V D.C. 22 mA
Mkr 245 K... 944 569-...	Gain dB AGC output level dBμV AGC range dB Noise figure dB Minimum input level for AGC operation dBμV			21 83 -25 2,5 62	+24 V D.C. 22 mA

Please specify channel when ordering.

Power Supply Unit

Sng 2480

- ☐ Power supply unit for remote feeding of Mvr... and Mkr... series
- ☐ Mains supply 200–240 V A.C. 50/60 Hz
- ☐ Length of mains connection cord 1 m
- ☐ Power consumption: 5 W approx.
- ☐ Operating voltage: +24 V D.C. electrically stabilized
- ☐ Supply current: 80 mA max.



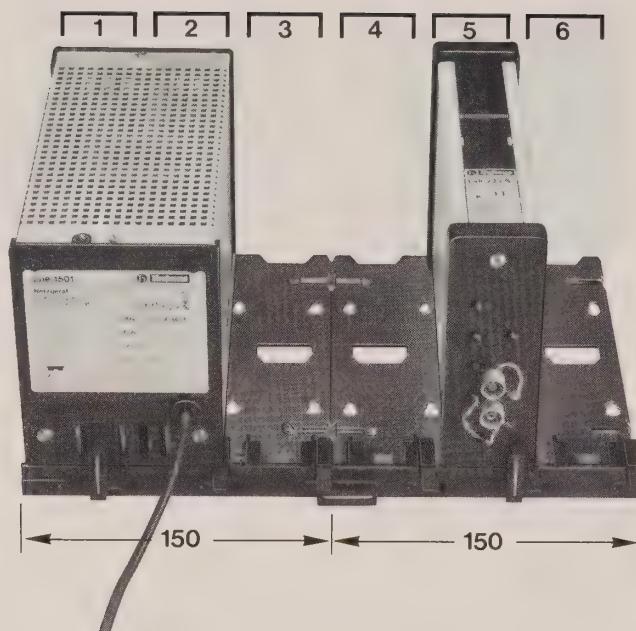
- ☐ Shielding rate: up to 470 MHz ≥ 75 dB; 470...862 MHz ≥ 65 dB
- ☐ Connection of coaxial cable by plugs Kos 1 which are to be ordered separately
- ☐ Dimensions: 140 x 100 x 65 mm

Sng 24/350

- ☐ Power supply unit for remote feeding of pre-amplifiers of Mvr... and Mkr... series by remote feeding filter Fw 1 (see page 31) as well as pluggable components of Sbv, Skv, Sbu and Esv series by DC adapter Sa 1 (see page 65)
- ☐ Mains supply voltage 200–240 V A.C./50–60 Hz
- ☐ Length of mains connecting cord 1 m
- ☐ Electrically stabilized with overload protection
- ☐ Power consumption at full load 16 W
- ☐ Operating voltage: 24 V D.C.
- ☐ Supply current: 350 mA max.
- ☐ Connection by screws
- ☐ Temperature range: -20 °C...+60 °C
- ☐ Dimensions: 187 x 100 x 70 mm

Type	Sng 2480	Sng 24/350
Ordering code	944 593-001	962 208-001
P.T.T. approval nr.	A 676 006 V	-

The Hirschmann "TOP" system combines an advanced technical conception with most modern design. The superior mechanical and electrical features guarantee a maximum of long life under lowest service cost.



□ Two base plates assembled and equipped with a power pack and one standard modules

□ The very handy and compact modules are completely shielded against both HF radiations and penetration of dust. The modules, amplifiers, converters and power packs are simply to place on the base plate without any tool

□ Specially selected transistors and IC's guarantee a maximum of longlife and of insensibility to temperature fluctuations. All amplifiers and converters are equipped at their input with adjustable level controls

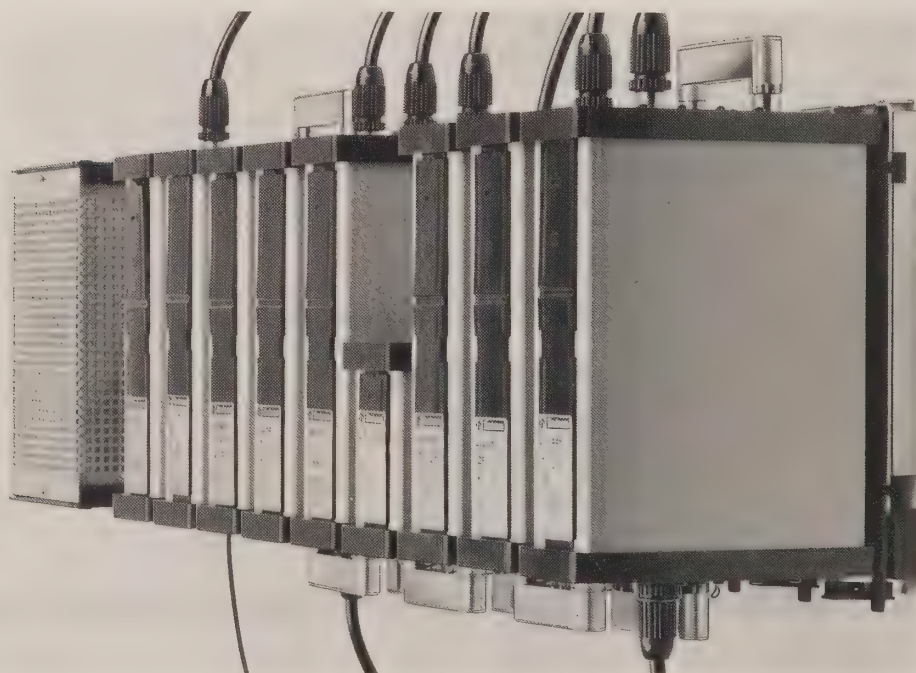
□ The supply voltage of 24 V D.C. (+ pole on housing) is fed to the modules from the base plate by connecting bars.

Preamplifiers can easily be remote fed from standard modules

□ A group of amplifiers and/or converters is interconnected by the busbar system and offers two free outputs for the connection of the distribution network. The group can be enlarged by adding the number of base plates needed

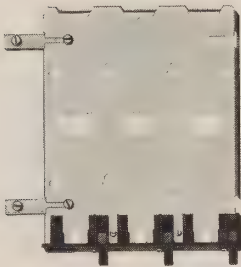
□ The amplifier and converter modules are supplied with all necessary accessories for the assembly

□ All modules of "TOP" system meet specifications of German P.T.T. and safety regulations of VDE and further international authorities



Base plate

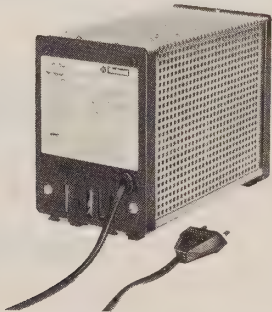
- ☐ The base plate is designed to accept 3 modules of standard width. The power pack together with one module will need one base plate
- ☐ Two or more base plates can be combined to allow an extension to the required number of modules
☐ Two U-shaped metal connecting bars and a set of wood screws are supplied with every base plate
- ☐ The modules are simply placed on the plate and slide-in until they are locked by a stop spring
☐ Dimensions:
184 x 150 x 14 mm



Type	Lgp 3
Ordering code	944 011-000

Power supply modules
Lne-series

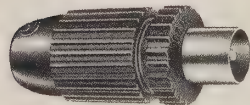
- ☐ For the supply of working voltage to "TOP" amplifiers and converters
☐ Electronically stabilized with overload protection
☐ +pole at the housing
- ☐ Mains supply: 200-240 V
50-60 Hz
☐ Length of mains connecting cord: 1 m
☐ The width of Lne modules is twice the standard module
- ☐ Supplied with
1 connection for voltage supply
1 Lw 76



Type	Lne 701	Lne 1501
Ordering code	944 023-000	944 018-001
Output voltage	-24 V D.C.	-24 V D.C.
Max. output current	0-700 mA	200-1500 mA
Power consumption at full load	38 W	65 W

Terminal resistor

- ☐ For reflexion-free closing of an unused busbar output on "TOP" amplifiers and converters



Type	Lw 76
Ordering code	944 377-000
P.T.T. approval nr.	A 683 088 V

Amplifier Modules

- ☐ Cable connection by coaxial plugs to IEC 169-2 (DIN 45 325)
- ☐ Shielded metal housing

- ☐ Built-in adjustable attenuators allow the reduction of input level by up to -18 dB in FM and TV

modules and -30 dB in AM amplifiers

Amplifiers Lvb series for AM and FM

- ☐ Shielding rate ≥ 75 dB

- ☐ Accessories supplied with each module:
1 coaxial plug Kos 1
1 connector for voltage supply

- ☐ Dimensions:
140 x 45 x 205 mm



Type Ordering code P.T.T. approval nr.		AM 0,15–10 MHz	FM 8,5–108 MHz	Current at -24 V
Lvb 490 942 125-000 A 683 047 V	Gain Max. output level Noise figure	30 114 —	up to 26,1 MHz	150 mA
Lvb 4830 942 241-001 A 683 005 U S	Gain Max. output level Noise figure	41 120 —	33 116 5,5	340 mA
Lvb 7830 942 240-001 A 683 004 U S	Gain Max. output level Noise figure	41 120 —	46 116 5,5	370 mA
Lvb 2202 942 213-001 A 683 048 V S	Gain Max. output level Noise figure		26,5 121 7	280 mA

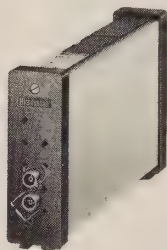
↗ Adjustable attenuator at input

**TV Channel Amplifiers
LvK Series**

☐ Accessories supplied with each module:
1 coaxial plug Kos 1
1 busbar connector Kob 75
1 connector for voltage supply

☐ Shielding rate
≥75 dB (LvK 311 S K, LvK 235 S K, LvK 331 S K, LvK 431 S K)
≥65 dB (LvK 445 S K, LvK 545 S K)
☐ Built-in adjustable attenuators allow the reduction of input level by up to -18 dB

☐ Please specify channels when ordering
☐ Dimensions:
standard module: 140 x 45 x 205 mm
half module: 140 x 45 x 115 mm



Standard module LvK 431 S K.. Half module
LvK 311 S K.. LvK 445 S K.. LvK 331 S K..
LvK 235 S K.. LvK 545 S K..

Type Ordering code P.T.T. approval nr.		VHF I Ch 2-4	VHF III Ch 5-12	UHF Ch 21-60	Current at -24 V
LvK 311 S* K 2...K 4 942 181-002...004 A 683 049 V S	Gain Max. output level Noise figure	dB dBμV dB	50 123 6		120 mA
LvK 235 S K 5...K 12 942 232-005...012 A 683 050 V S	Gain Max. output level Noise figure	dB dBμV dB	32 123 4,5		80 mA
LvK 331 S K 5...K 12 942 184-005...012 A 683 051 V S	Gain Max. output level Noise figure	dB dBμV dB	46 123 4		120 mA
LvK 431 S* K 5...K 12 942 185-005...012 A 683 052 V S	Gain Max. output level Noise figure	dB dBμV dB	54 123 6		145 mA
LvK 445 S* K 21...K 60 942 191-021...060 A 683 053 V S	Gain Max. output level Noise figure	dB dBμV dB		43 122 8	100 mA
LvK 545 S* K 21...K 60 942 177-021...060 A 683 054 V S	Gain Max. output level Noise figure	dB dBμV dB		58 122 5,5	110 mA

* Possibility for remote-feeding of pre-amplifiers
↗ Adjustable attenuator at input

**IF-Converter
Modules for Signal
Processing
Lze/Lza Series**

- The new and advanced generation of a converter system for conversion via standard intermediate frequency
- For use in Top System in combination with all Top modules
- Lze/Lza series offer a high variety of applications in headend stations
- All channel combinations can be realized

- Lze down-converters equipped with effective A.G.C. circuit
- Excellent selectivity by modern surface acoustic wave filter (SAW) incorporated in Lze series
- High frequency stability by crystal controlled oscillators
- Lze output is connected to Lza input by busbar connector Kob 75

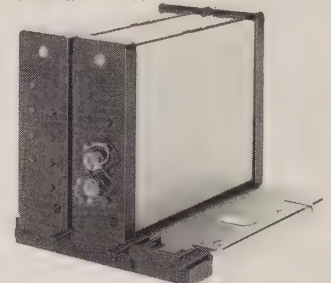
- Accessories supplied with each module:
1 busbar connector Kob 75
1 connector for voltage supply
1 coaxial plug Kos 1
- Shielding rate ≥ 75 dB.
Exception Lze 446 K.. and Lza 264 K..:
Up to 470 MHz ≥ 75 dB,
470-862 MHz ≥ 65 dB
- Mirror frequency rejection up to 96 dB
- Built-in adjustable attenuators -18 dB
- Meet specifications of German P.T.T.



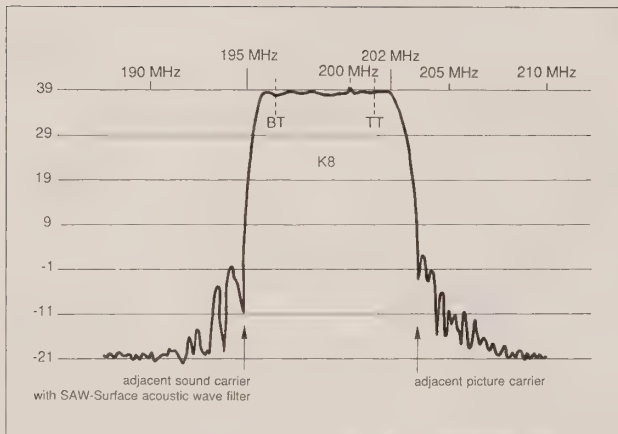
Lze down-converter



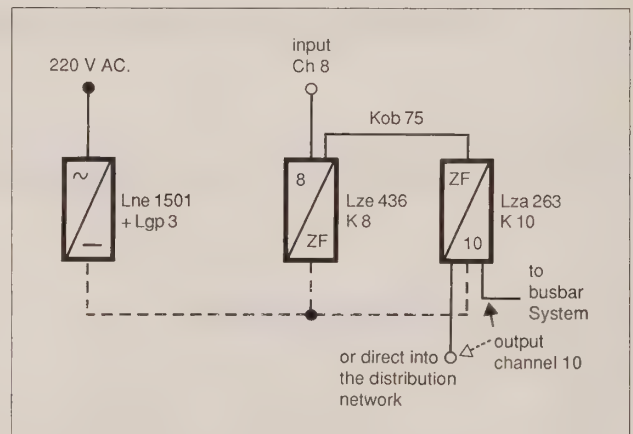
Lza up-converter



combination of Lze/Lza



Selection curve Lze 436 channel 8 into IF



Example for conversion of channel 8 into channel 10



Down-converters Lze Series

Type Ordering code P.T.T. approval nr.	Conversion	Gain	A.G.C. range	output level factory adjusted	input level		Noise figure	Current at -24 V D.C.
					min.	max.		
Lze 416 K.. 948 280-... A 683 062 V S	VHF I into IF	29 dB	+ 10 dB - 17 dB	100 dB μ V	61 dB μ V	88 dB μ V	5 dB	125 mA
Lze 436 K.. 948 279-... A 683 063 V S	VHF III into IF	29 dB	+ 10 dB - 17 dB	100 dB μ V	61 dB μ V	88 dB μ V	5 dB	120 mA
Lze 446 K.. 948 278-... A 683 064 V S	UHF into IF	29 dB	+ 10 dB - 17 dB	100 dB μ V	61 dB μ V	88 dB μ V	5 dB	180 mA
Lze 476 KS.. 948 290-... A 683 065 V	LSC ¹⁾ into IF	29 dB	+ 10 dB - 17 dB	100 dB μ V	61 dB μ V	88 dB μ V	5 dB	125 mA
Lze 486 KS.. 948 291-... A 683 066 V	USC ²⁾ into IF	29 dB	+ 10 dB - 17 dB	100 dB μ V	61 dB μ V	88 dB μ V	5 dB	125 mA

For remote feeding of pre-amplifiers use remote supply voltage filter type Fw 1 (see page 31).

Up-converters Lza Series

Type Ordering code P.T.T. approval nr.	Conversion	Gain	Output level adjustable at constant 100 dB μ V input level			Current at -24 V D.C.
			min.		max.	
Lza 261 K.. 948 282-... A 683 067 V	IF into VHF I	29 dB	112 dB μ V	—	123 dB μ V	105 mA
Lza 263 K.. 948 281-... A 683 068 V	IF into VHF III	26 dB	112 dB μ V	—	123 dB μ V	100 mA
Lza 264 K.. 948 292-... A 683 069 V	IF into UHF	29 dB	112 dB μ V	—	123 dB μ V	115 mA
Lza 267 KS.. 948 283-... A 683 070 V	IF into LSC ¹⁾	26 dB	112 dB μ V	—	123 dB μ V	100 mA
Lza 268 KS.. 948 284-... A 683 071 V	IF into USC ²⁾	25 dB	112 dB μ V	—	123 dB μ V	100 mA

1) LSC = Lower special channels S 4...S 10
2) USC = Upper special channels S 11...S 20

ESC = Conversion available on request

Amplifiers with Automatic Gain Control (A.G.C.)

- ☐ A.G.C. amplifiers are for use in community antenna systems in fringe areas with fluctuating signal levels; also in larger antenna systems with one or more repeater amplifiers
- ☐ Possibility for remote-feeding of pre-amplifiers
- ☐ Shielding rate ≥ 75 dB (Lvkr 311 S K, Lvkr 431 S K) ≥ 65 dB (Lvkr 545 S K)
- ☐ Accessories supplied with each module:
1 coaxial plug Kos 1
1 busbar connector Kob 75
1 connector for voltage supply

- ☐ Built-in adjustable attenuator allows the reduction of input level by up to -18 dB
- ☐ Please specify channel when ordering
- ☐ Dimensions:
140 x 45 x 205 mm
- ☐ **Output level in delivery stage: 120 dB μ V**



Type Ordering code P.T.T. approval nr.		VHF I Ch 2-4	VHF III Ch 5-12	UHF Ch 21-60	Current at -24 V
Lvkr 311 S K 2...K 4 942 182-002...004 A 683 055 V S	Gain Max. output level Noise figure	dB dB μ V dB	40 \pm 10 112...122 6		165 mA
Lvkr 431 S K 5...K 12 942 186-005...012 A 683 056 V S	Gain Max. output level Noise figure	dB dB μ V dB	44 \pm 10 112 ...122 6		210 mA
Lvkr 545 S K 21...K 60 942 178-021...060 A 683 057 V S	Gain Max. output level Noise figure	dB dB μ V dB		48 \pm 10 112...122 5,5	140 mA

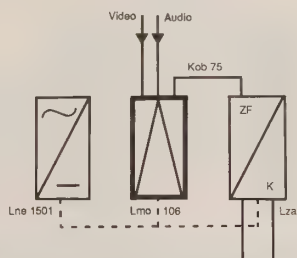
↗ Adjustable attenuator at input

TV modulator

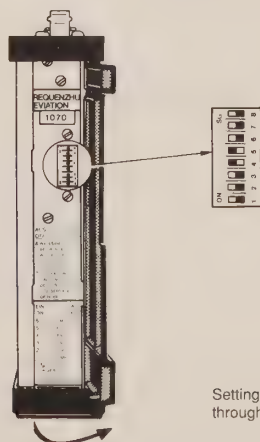
- ☐ Multi standard TV modulator with switchable picture/sound separation
- ☐ For the feeding-in of VIDEO-programmes into MATV- and CATV-systems
- ☐ For the remodulation of satellite TV programmes and the

- feeding-in into SMATV-systems
- ☐ Built-in surface acoustic wave filter for high suppression of harmonics
- ☐ Output standard TV intermediate frequency (IF)

- ☐ Suitable for PAL/SECAM and NTSC colour standards
- ☐ Re-conversion into any TV channel by up-converters of Top-System Lza series



Type	Lmo 106
Ordering code	948 317-001
P.T.T. approval nr.	A 683 032 V
Housing	1 standard module of top-programme
Current at -24 V D.C.	260 mA
Modular VIDEO section	
Input signal	standard composite colour signal 1 V _{pp} to Z = 75 Ω
Frequency range	20 Hz...5 MHz
Modulation mode	AM vestigial sideband modulation (with partially suppressed sideband) negative ref. to CCIR standards
Switches for clamping and white limiting on/off	
Modular AUDIO section	
Input signal	0 dBm at 600 Ω asymmetric $\approx 0,775 V_{eff}$
Frequency range	30 Hz...15 kHz
Modulation	FM, internal deviation adjusted to 50 kHz
IF output signal	
Picture carrier	38,9 MHz, quartz stabilized
Frequency stability	better than $1 \cdot 10^{-4}$
Output level	100 dBμV
Soundcarrier programmable to one of 4 frequencies	33,4, 34,4, 32,9 or 32,4 MHz
Distance VIDEO to sound carrier level	13 dB \pm 2 dB
Connections	VIDEO and AUDIO input BNC IF input IEC-socket 169-2 (DIN 45325)



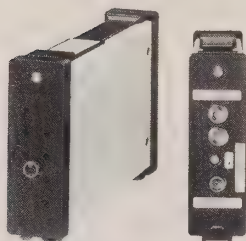
Setting of picture/sound frequency through Dip-switches

**Economical
TV modulators**

☐ AUDIO and VIDEO
☐ Economical TV modulator
 with 5,5 MHz picture/sound separation¹⁾

☐ AUDIO only
☐ Economical TV modulator
 with 5,5 MHz picture/sound separation¹⁾
☐ Special application for sound
 modulation (mono) only

☐ This mode allows in Hotel
 CATV systems the distribution
 of an AUDIO programme to be
 received by TV sets



Type	Lmo 116 A	Lmo 116 B
Ordering code	961 039-101	961 039-102
P.T.T. approval nr.	A 683 126 V	A 683 130 V
Housing	1 standard module of top-programme	1 standard module of top-programme
Current at -24 V D.C.	90 mA	100 mA
Modulator VIDEO section		
Input signal	standard composite colour signal 1 V _{pp} to Z = 75 Ω	internal modulation with negative horizontal sync. pulse
Frequency range	20 Hz...5 MHz	
Modulation mode	AM vestigial sideband modulation (with partially suppressed sideband) negative ref. to CCIR standard B/G	AM vestigial sideband modulation negative ref. to CCIR standard B/G
Modulator AUDIO section		
Input level	0 dBm \pm 0,775 V _{eff} ; 600 Ω / > 10 KΩ asymmetric, switchable	0 dBm \pm 0,775 V _{eff} ; 600 Ω / > 10 KΩ asymmetric, switchable
Frequency range	40 Hz...15 KHz	40 Hz...15 KHz
Modulation	FM-F 3 E, internal deviation adjustable to 30 kHz	FM-F 3 E, internal deviation adjustable to 30 kHz
IF output signal		
Picture carrier	38,9 MHz, quartz stabilized	38,9 MHz, quartz stabilized
Frequency stability	better than 1·10 ⁻⁴	better than 1·10 ⁻⁴
Output level	102 dBμV	102 dBμV
Distance VIDEO to sound carrier level	13 dB \pm 1 dB	13 dB \pm 1 dB
Connections	VIDEO and AUDIO input BNC IF output IEC-socket ref. DIN 45 325	AUDIO input BNC IF output IEC-socket ref. DIN 45 325

¹⁾ picture/sound separation of 4,5 MHz, 6,0 MHz and 6,5 MHz available on request

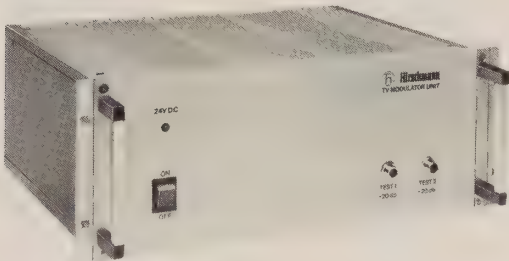


TV modulators of
TVM Series

Application:
☐ For the remodulation of
Satellite TV programmes
☐ For the feeding-in of VIDEO
programmes into MATV and
CATV systems

☐ 19" slide-in modules with 4
units of height
☐ To be used as table-top units
☐ Single or double modulator in
one 19" housing
☐ Available for all TV-bands as
well as for standard TV-IF out-
put

☐ Adjustment for TV standard
ref. CCIR system B/G, D, I, K
and A
☐ Built-in surface acoustic wave
filter (SAW) for high selectivity
☐ Meet German PTT specifica-
tions ref. to FTZ W 373



Technical Data

Constructions and dimensions	19" slide-in module with 4 units of height grey-coloured front panel 19" housing closed around width: 483 mm height: 178 mm depth: 374 mm also available with rubber bases as a table top unit
Connections	VIDEO: BNC – 75 Ω type AUDIO: 5-pole socket acc. to DIN 41 524 HF outputs: IEC 169-2 (DIN 45 325) 75 Ω standard
Operating voltage	220 V ± 10 %/50–60 Hz 110/127 V/60 Hz upon request
Power input	10...20 W (depending on type)
Admissible ambient temperature	+ 5°C to + 40°C

Modulator VIDEO Section

Signal input	FBAS standard signal (BW, PAL, SECAM, NTSC) 1 V _{pp} at 75 Ω
Frequency range	20 Hz...5 MHz
Modulation	AM vestigial sideband modulation with partly suppressed sideband, negative, ref. CCIR standard B/G
Differential gain	< 3% with 4,43 MHz colour subcarrier
Group delay characteristics	ref. to CCIR standard B/G
Differential phase	< 3° at 4,43 MHz
VIDEO signal-to-noise ratio (non-rated, without sound carrier)	> 50 dB

Modulator AUDIO Section

Signal input	0 dBm at 600 Ω, asymmetric = 0,775 V _{eff} , switchable to >10 KΩ
Adjustment range	± 10 dB
Frequency range	40 Hz to 15 kHz
Modulation	FM–F 3 E, internal deviation adjustable to 30 kHz
Pre-emphasis	50 μs ± 5 μs
Distortion attention	> 40 dB
Signal-to-noise ratio	> 46 dB

Modulator IF Section

IF-interface	38,9 MHz quartz-stabilized
Frequency stability	$> 1 \cdot 10^{-4}$
Internal IF level	100 dB μ V
Spacing between levels of picture and sound level	13 dB \pm 2 dB
Spurious frequency suppression	> 60 dB
Picture/sound separation of on request	4,5 MHz; 6,0 MHz; 6,5 MHz

Modulator HF Section

HF-outputs	1 resp. 2 TV channels or 1 resp. 2 IF signals
HF-output levels	TV channels 120,0 dB μ V or IF channel 100,0 dB μ V
Test socket	-20 dB

**Types of TVM Series
Modulators**

Single Modulator units

Type	Ordering code	Output 1 channel in
TVM 7101 K...	949 574-001	VHF I
TVM 7103 K...	949 575-001	VHF III
TVM 7104 K...	949 576-001	UHF
TVM 7106	949 577-001	IF

Modulators for special TV channels upon request.
When ordering, please state channels desired as well as CCIR System
(e.g. D, I, K, A, B/G, H) required.

Double Modulator units

Type	Ordering code	Output 1 channel each in
TVM 7211 K... + K...	949 578-001	VHF I + VHF I
TVM 7213 K... + K...	949 579-001	VHF I + VHF III
TVM 7214 K... + K...	949 580-001	VHF I + UHF
TVM 7233 K... + K...	949 581-001	VHF III + VHF III
TVM 7234 K... + K...	949 582-001	VHF III + UHF
TVM 7244 K... + K...	949 583-001	UHF + UHF
TVM 7266	949 584-001	IF + IF

Modulators for special TV channels upon request.
When ordering, please state channels desired as well as CCIR System
(e.g. D, I, K, A, B/G, H) required.

**Accessories
supplied with**

All connection cables for

VIDEO	length 2 m
AUDIO	length 2 m
HF	length 2 m
HF-Monitor	length 2 m

plugs	BNC + BNC
plug	Mas 5100 S (DIN 51 524) 1 end open
plugs	Kos 1 + Kok 1 (IEC 169-2)
plugs	Koswi 100 + Koswi 100 (IEC 169-2)

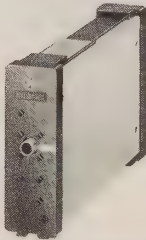


Signal Processing
Modules for AM and FM Radio
A.G.C. controlled

☐ FM/FM converter for the conversion of FM channels MONO and STEREO via standard IF 10,7 MHz

☐ AM/FM converter for the conversion of an amplitude modulated signal of medium wave range into a frequency modulated signal of a standard FM channel

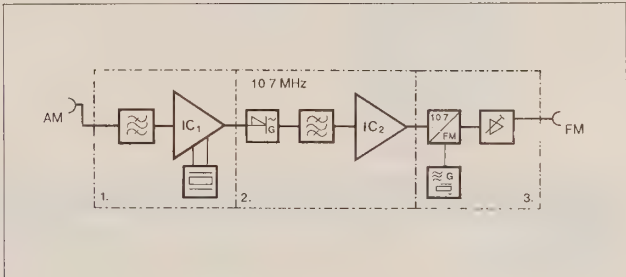
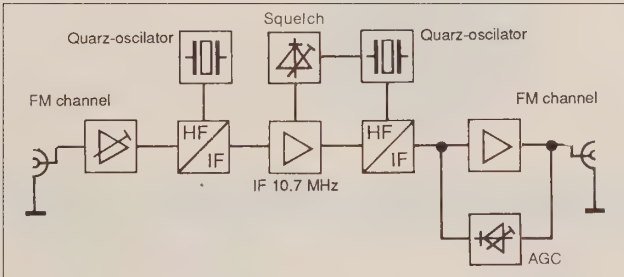
- ☐ Top Standard Module
- ☐ Double conversion
- ☐ 2 quartz oscillators
- ☐ Built-in squelch circuit
- ☐ Test socket -20 dB
- ☐ Shielding rate > 80 dB
- ☐ Input and output connection by splitters and/or tap-off boxes
- ☐ Please specify input and output channels when ordering



Type	TNA 262 A	TNA 952 B
Ordering code	961 001-001	961 004-001
P.T.T. approval nr.	A 683 107 VS	A 683 108 V
Operational frequencies and conversion	1 FM channel into another FM channel in the range of 87,5–108 MHz	AM 0,510 MHz...1,605 MHz FM 87,5 MHz...108,0 MHz
Input level range	40...80 dBμV	40...80 dBμV
A.G.C. output level adjustable	108...117 dBμV	108...117 dBμV
Squelch circuit, switchable on/off	≤ 20 dBμV input level	≤ 20 dBμV input level
Cross talk suppression	≥ 30 dB	≥ 40 dB
Conversion through IF	10,7 MHz	0,455 MHz and 10,7 MHz
Test socket	-20 dB	-20 dB
Current	75 mA/-24 V D.C.	60 mA/-24 V D.C.

Note: for special applications, converters of FM stereo into FM mono are available on request

Note: Conversion of longwave AM signals into FM channels on request

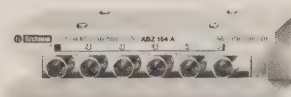
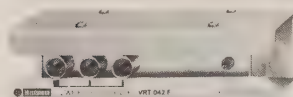


**Splitters and
Directional Couplers**

☐ For separating and combining of AM and FM signals

☐ Completely shielded housing
☐ All connections IEC standard
75 Ω

☐ Remote feeding types for the connection of pre-amplifiers
☐ Return loss ≥ 18 dB



Type	VRT 042 A	VRT 042 F	VRT 042 M	VRT 063 A
Ordering code	961 319-001	961 006-001	961 320-001	961 018-001
Frequency range	47,0...450 MHz	87,5...108 MHz	47,0...450 MHz	87,5...108 MHz
Symbol				
Distribution attenuation	$\leq 4,0$ dB	$\leq 4,0$ dB	$\leq 4,3$ dB	$\leq 5,5$ dB
Decoupling	≥ 26 dB	≥ 26 dB	≥ 26 dB	≥ 26 dB
Features		Remote feeding -24 V D.C.	Test socket -20 dB	

Type	VRT 063 F	VRT 074 A	VRT 074 F
Ordering code	961 007-001	961 019-001	961 008-001
Frequency range	87,5...108 MHz	87,5...108 MHz	87,5...108 MHz
Symbol			
Distribution attenuation	$\leq 5,5$ dB	$\leq 7,5$ dB	$\leq 7,5$ dB
Decoupling	≥ 26 dB	≥ 26 dB	≥ 26 dB
Features	Remote feeding -24 V D.C.		Remote feeding -24 V D.C.

Type	ABZ 134 A	ABZ 154 A	ABZ 102 F
Ordering code	961 317-001	961 318-001	961 015-001
Frequency range	47,0...450 MHz	47,0...450 MHz	87,5...108 MHz
Symbol			
Through pass/Branching	$\leq 13,5-14,5$ dB	$\leq 1,8$ dB, $\leq 15,0-17,0$ dB	$\leq 1,8$ dB, $\leq 10,5-11,0$ dB
Decoupling	≥ 30 dB	≥ 30 dB	≥ 30 dB
Features			Remote feeding -24 V D.C.

**Accessories:
Remote feeding filters**

Type	FVS 030	FVS 030 D
Ordering code	961 010-001	961 011-001
Frequency range	40,0...862 MHz	40,0...862 MHz
Symbol		
Through pass	$\leq 0,5$ dB	$\leq 0,5$ dB
D.C. Voltage	-24 V/150 mA	-24 V/150 mA
Features	single unit	double unit

Pilot frequency generator

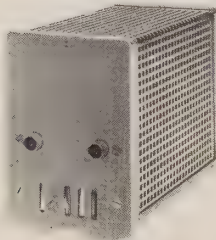


- ☐ The pilot frequency generator produces two crystal controlled pilot signals for the automatic level control of trunk line amplifiers
- ☐ The levels of both pilot signals are individually adjustable
- ☐ 2 outputs for busbar operation
- ☐ A test socket with an output level reduced by 15 dB for both frequencies is built-in for measuring purposes
- ☐ Meets specifications of German P.T.T. (FTZ approval W 373)
- ☐ Housing: one standard module of TOP series

Type	Lpi 5700
Ordering code	942 108-...
Operational frequencies	35...280 MHz
Lower pilot frequency	to be indicated
Upper pilot frequency	when ordering
Harmonic suppression of pilot frequencies	66 dB
Output level each pilot frequency	100...120 dBµV adjustable
Current	190 mA/-24 V D.C.

Remote-feeding Transformer Units

- ☐ Power transformer unit with 2 built-in remote feeding filters
- ☐ Connection of coaxial cable by plugs, to IEC 169-2 (Kos 1)
- ☐ Housing fits the Hirschmann TOP system. The width is twice the standard module



Type	Lsw 6045
Ordering code	976 131-001
Transformer unit:	
Voltage primary	220 V ± 10% 50-60 Hz 127 V ± 5% 50-60 Hz*
Voltage secondary	42-50-60 V A.C. selected by switch
Current secondary	6 A max. at 60 V A.C.
Temperature range	-20°C...+60°C
Remote feeding filter	
Throughpass current max.	6 A
Throughpass voltage max.	65 V
Throughpass attenuat. max.	1 dB
Decoupling filter no. 1 to no. 2	60 dB
Frequency range	5-862 MHz

* Please specify primary voltage when ordering

Power Transformer Unit

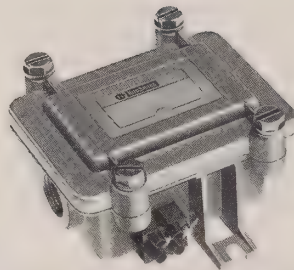
- ☐ For the remote feeding of trunk line amplifiers or smaller headend stations
- ☐ Metal housing for wall installation
- ☐ Dimensions:
205 x 127 x 110 mm
- ☐ Weight: 3.3 kilos



Type	Gnt 42/2500
Ordering code	950 695-000
Voltage primary	220 V ± 10% 50-60 Hz 127 V ± 5% 50-60 Hz*
Power consumption (full load)	125 VA at 220 V
Voltage secondary	42 V A.C.
Temperature range	-20°C...+60°C
Current secondary	2.4 A
Fuse for secondary voltage	2.5 A

* Please specify primary voltage when ordering

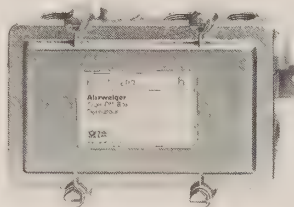
Power Inserters



- ☐ For the combination or separation of high frequency and A.C. voltage in remote-fed headend stations, also in trunk line amplifier stations
- ☐ Die-cast aluminium housing for indoor installation. Cable connection by cable fittings Muf-series (page 45)
- ☐ Connection of remote feeding voltage by screw terminal
- ☐ Dimensions: 98 x 96 x 60 mm

Type	Kuf 7500	
Ordering code	949 389-001	
Operational frequency	40...862 MHz	
Throughpass attenuation	40...300 MHz 0.2...0.4 dB	300...862 MHz 0.4...0.8 dB
Decoupling HF against remote feeding voltage	≥ 80	≥ 66
Return loss	20	16
Max. remote feeding voltage	65 V~	
Max. current at 46 dB hum suppression	5 A~/6.5 A-	
Shielding rate	60 dB	

Splitter and
Tap-off Boxes



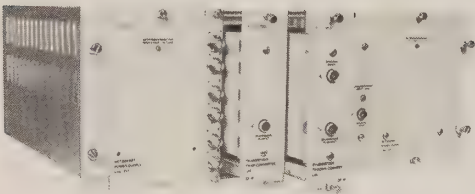
- ☐ With throughpass for remote feeding voltage up to 60 V A.C. Current max 4 A
- ☐ Die-cast aluminium housing. Protection class IP 56
- ☐ For the installation into distribution pedestals, amplifier cabinets or indoor locations
- ☐ PG 11 threads for cable connection by screw-in sockets for either IEC or 5/8" connectors as well as for cable fittings of Muf-series (see page 45)
- ☐ All parts powerable, remote supply path selectable by connector plugs
- ☐ Impedance 75 Ω
- ☐ Frequency range 5...450 MHz
- ☐ Return loss ≥ 17 dB at 450 MHz
- ☐ Shielding rate ≥ 75 dB at 450 MHz
- ☐ Throughpass current ≤ 4 A
- ☐ Temperature range -30°C...+ 60°C
- ☐ Dimensions: 200 x 125 x 70 mm
- ☐ Weight: 0.8 kg

Type	VRF 0420	VRF 0740	ARF 1220	ARF 1820	ARF 1240
Ordering code	976 615-001	976 615-002	976 614-001	976 614-003	976 614-002
Symbol					
Distribution/ Branching attenuation(dB)	4	7.5	12.5	18	12
Throughpass attenuation (dB)	-	-	2.0	1.5	3.5
Mutual attenuation between branched outputs (dB)	> 20	> 20	> 40	> 40	> 30
Remarks	Splitter 2-way	Splitter 4-way	Tap-off 2-way	Tap-off 2-way	Tap-off 4-way

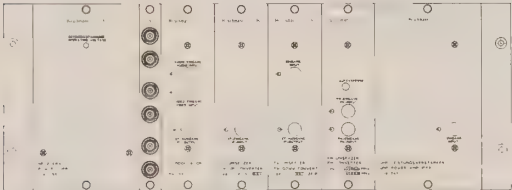


19-inch Adapter

It is possible to assemble the Top modules in a 19"-frame. This allows future extensions with e.g. satellite processing modules



Insertion possibilities



Type	Ordering code	Features
BGT 019 K TOP	878 359-019	Mounting frame 19"
MT-Lne 1501	878 813-001	Module frame, power supply
MT-L...001	878 816-001	Module frame, standard module
FP-Lne 1501	878 823-001	Front plate, power supply
LP-Lmo 001	878 824-001	Front plate, modulator
FP-Lza 001	878 825-001	Front plate, up-converter
FP-Lze 001	878 826-001	Front plate, down converter
FP-Lvu 001	878 827-001	Front plate, converter
	878 903-001	Connection panel, 4 PU*
	877 316-010	Empty plate, 10 PU
	877 316-020	Empty plate, 20 PU

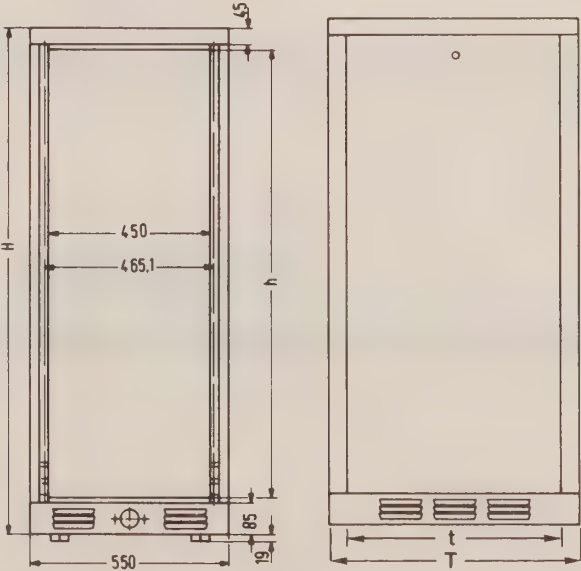
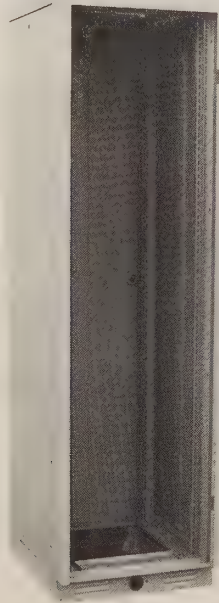
* 1 PU = 0.2" = 5.08 mm

19"-Racks

- Steel construction
- For assembly of professional and semi-professional headend stations

Height	HU*	36	40	44
	h mm	1603,4	1781,2	1959
	H mm	1763,4	1941,2	2119
Depth	t mm	560	560	560
	T mm	592,5	592,5	592,5
Weight	kg	63	68	72

* 1 HU = 1 3/4" = 44,45 mm
Other sizes and accessories available!



Trunkline Amplifiers
SV-Series for Two-way
Operation

Application:
☐ For large and medium sized
CATV networks

Mechanical Conception:
☐ Die-cast aluminium housing
☐ Weather-proof, protection
mode IP 54
☐ All electronic modules to be
inserted by plug-in system mo-
dules
☐ Dimensions:
342 x 500 x 180 mm
☐ Weight: approx. 10 kg, fully
equipped approx. 15 kg

Electrical Conception:
☐ The modular system allows
the combination of modules for
various applications

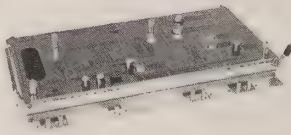
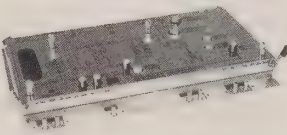
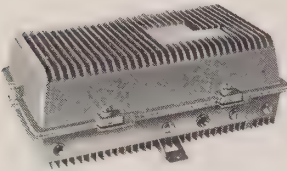
☐ Power supply by direct mains
220 V A.C. or by remote feeding
from the input or output
☐ Built-in overvoltage protection

Features:
☐ For trunklines with 2 pilot car-
riers (in the lower and upper fre-
quency ranges)
☐ Manual control or AGC/ASC
operation
☐ Pluggable trunkbridget amplifier
module
☐ Increased output level by
power doubling modules
☐ Pluggable splitter or tap-off
modules

☐ One or two outputs for each
amplifier module
☐ Operation suitable for both
300 MHz and 450 MHz net-
works
☐ Reverse channel operation
5...25 MHz
☐ Test-sockets -20 dB at input
and output
☐ All coaxial cable connections
by PG 11 cable glands
☐ The trunk amplifier is prepared
for 2-way operation, duplex
filters at input and output are
built-in. The reverse channel
path can be realized active or
passive by an amplifier or equa-
lizer module. The reverse chan-
nel amplifier is needed at every
2nd amplifier station for reverse
operation

Trunk amplifier,
complete assembly

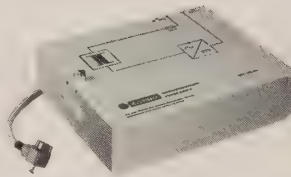
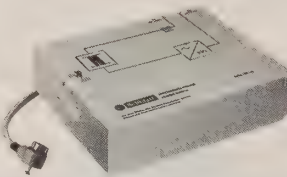
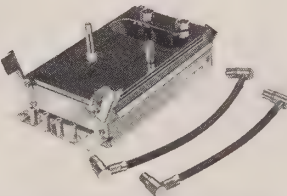
Trunk amplifier module



Type	SVM 2226 A	SVM 2226 M
Features	AGC/ASG	manual control

Bridger amplifier module

Power supply module



Type	AVM 2208	SVS 220	SVS 25/60
Features	-	main supply 220 V A.C.	remote fed

Reverse amplifier module

Reverse equalizer module



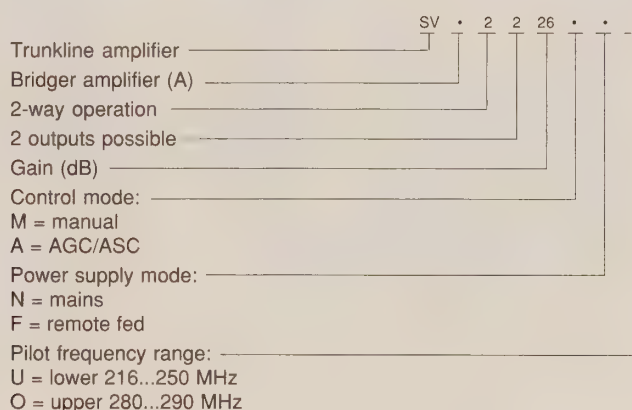
Type	RVM 25-13	REM 25-05
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Type Table for Trunkline
Amplifiers SV-Series
for Two-way Operation

Type	Ordering code	Description	Voltage supply
SV 2226 MN	976 517-001	trunk amplifier, manual control	mains
SV 2226 MF	976 517-011	trunk amplifier, manual control	remote
SV 2226 AFU	976 517-012	trunk amplifier, AGC/ASC lower range	remote
SV 2226 AFO	976 517-013	trunk amplifier, AGC/ASC upper range	remote
SV 2226 ANU	976 517-002	trunk amplifier, AGC/ASC lower range	mains
SV 2226 ANO	976 517-003	trunk amplifier, AGC/ASC upper range	mains
SVA 2226 MN	976 517-101	trunk bridger, manual control	mains
SVA 2226 MF	976 517-111	trunk bridger, manual control	remote
SVA 2226 ANU	976 517-102	trunk bridger, AGC/ASC lower range	mains
SVA 2226 ANO	976 517-103	trunk bridger, AGC/ASC upper range	mains
SVA 2226 AFU	976 517-112	trunk bridger, AGC/ASC lower range	remote
SVA 2226 AFO	976 517-113	trunk bridger, AGC/ASC upper range	remote
Modules only:			
SVS 220	976 514-001	power supply unit 220 V A.C.	
SVS 25/60	976 515-001	power supply unit remote fed	
SVG 2000	976 516-001	die-cast aluminium housing	
AVM 2208	976 513-001	bridger amplifier module	
SVM 2226 M	976 512-001	trunk amplifier module, manual control	
SVM 2226 AU	976 512-002	trunk amplifier module, ASC/AGC lower range	
SVM 2226 AO	976 512-003	trunk amplifier module, ASC/AGC upper range	
RVM 25-13	889 954-001	reverse channel amplifier module	
REM 25-05	889 967-001	reverse channel equalizer module	

Type code for Trunkline
Amplifiers of SV Series



**Technical Data for Trunkline
Amplifiers SV-Series
for Two-way Operation**

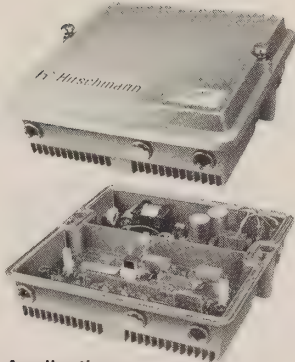
Type	SV 2226 MF (MN)	SV 2226 AFU (AFO, ANU, ANO)	SVA 2226 MF (MN)	SVA 2226 AFU (AFO, ANU, ANO)
Frequency range forward (MHz)	47...450			
Frequency range reverse (MHz)	5... 25			
Output level* (dBμV)	124,5	124,5	124,5/123,0	124,5/123,0
Gain (dB)	26 ±1	26 ±1	26 + 10 ±1	26 + 10 ±1
Level range adjustable (dB)	-8	-8	-8	-8
Pre-equalization max. (dB)	21	21	21/21	21/21
AGC range	+2/-5			
ASC range	4,5			
Operating level range (dBμV)	—	90...100	—	90...1
Pilot frequency range	lower (U)/upper (O)		lower (U)/upper (O)	
For gain control (MHz)	216...250/280...290		216...250/280...290	
For slope control (MHz)	75...81		75...81	
Noise figure (dB)	8	8	8	8
Return loss VHF	≥ 20 dB (from 47 MHz – 1 dB per octave)			
Return loss reverse channel	20 dB			
Impedance (ohms)	75			
Test socket coupling (dB)	-20			
Current consumption (mA)	700	810	910	1020
Mains supply (V A.C.)	220 +10/-15%, 50-60 Hz (type N)			
Remote feeding (V A.C.)	25...60, 50-60 Hz via input or output (type F)			
Remote fed path current (A)	≤ 5			
Operational temp. range (°C)	-20...+50			
Protection class	IP 54			
RF connection	PG 11			

* at nominal gain without slope control and at 60 dB IMR ref DIN 45 004 B

Accessories

- ☐ Line equalizers with built-in adjustable attenuators 0...8 dB type KE 450-...-1, equalized cable attenuation at 450 MHz in steps of 3, 6, 9, 12, 15, 18, 21, 24, 27 and 30 dB
- ☐ type KE 300-...-1, equalized cable attenuation at 300 MHz in steps of 3, 6, 9, 12, 15, 18, 21, 24, 27 and 30 dB
- ☐ splitter module type VLM 450-03, attenuation -3,5 dB
- ☐ tap-off module type AM 450-12, attenuation -0,8/12 dB
- ☐ tap-off module type AM 450/18, attenuation -0,5/18 dB

Line Amplifiers LV-Series
for Two-way Operation



Application:
☐ For small and medium sized CATV systems or for installation in distribution networks connected to CATV systems

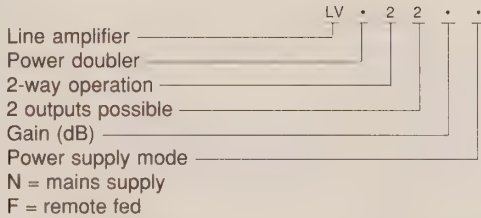
- Mechanical construction:**
- ☐ Die-cast aluminium housing, weatherproof, protection mode IP 65
 - ☐ All electronic modules to be inserted by plug-in system
 - ☐ Dimensions: 260 x 253 x 95 mm
 - ☐ Weight: approx. 5 kg
- Electrical construction:**
- ☐ The modular system allows the combination of modules for various applications.
 - ☐ Power supply by direct mains 220 V A.C. or by remote feeding from the input or output with in-

- tegrated overvoltage protection
- Features:**
- ☐ Forward 47...450 MHz, reverse channel 5...25 MHz
 - ☐ Operation suitable for 300 MHz networks
 - ☐ Increased output level by power doubling modules
 - ☐ Tap-off or splitter modules pluggable
 - ☐ Reverse channel modules active and passive, pluggable
 - ☐ Test-socket -20 dB at input and output
 - ☐ All connections by PG 11 threats

Type Table

Type	Ordering Code	Features	Gain (dB)	Output level (dBμV)
LV 2217 N	976 593-017	mains supply	17	123
LVH 2217 N	976 593-117	mains-supply, power doubler	17	124,5
LV 2217 F	976 593-217	remote-fed	17	123
LVH 2217 F	976 593-317	remote-fed, power doubler	17	124,5
LV 2221 N	976 593-021	mains supply	21	123
LV 2221 F	976 593-221	remote-fed	21	123
LV 2233 N	976 593-033	mains supply	33	122,5
LVH 2233 N	976 593-133	mains supply, power doubler	33	124,5
LV 2233 F	976 593-233	remote-fed	33	122,5
LVH 2233F	976 593-333	remote-fed, power doubler	33	124,5
LV 2238N	976 593-038	mains supply	38	121
LVH 2238 N	976 593-138	mains supply, power doubler	38	124,5
LV 2238 F	976 593-238	remote-fed	38	121
LVH 2238 F	976 593-338	remote-fed, power doubler	38	124,5
RKE 25-00	889 962-001	reverse channel by-pass, pluggable		
RVM 25-13	889 954-001	reverse channel amplifier, pluggable	13	
REM 25-05	889 967-001	reverse channel equalizer (5 dB)		

Type code for amplifiers of LV-series



**Technical Data for Line
Amplifiers LV-Series
for Two-way Operation**

Type		LV 2217	LV 2221	LV 2233	LV 2238	LVH 2217	LVH 2233	LVH 2238
Frequency range forward (MHz)		47...450						
Frequency range reverse (MHz)		5...25						
Output level at 450 MHz (dB μ V)		123	123	122,5	121	124,5	124,5	124,5
Gain at 47 MHz* (dB)		17,5 $\pm 0,5$	21,0 $\pm 0,6$	33,5 $\pm 1,0$	37,0 $\pm 1,0$	17,5 $\pm 0,5$	33,0 $\pm 1,0$	37,0 $\pm 1,0$
Flatness (dB)		$\pm 0,3$	$\pm 0,3$	$\pm 0,7$	$\pm 0,9$	$\pm 0,3$	$\pm 0,4$	$\pm 0,5$
Noise figure (dB)		7,5	7,0	6,5	7,0	8,0	7,5	6,5
Return loss VHF (dB)		≥ 20 (from 47 MHz – 1 dB per octave)						
Return loss reverse channel (dB)		20						
Insertion loss reverse channel (dB)		$\leq 1,5$						
Impedance (ohms)		75						
Test socket coupling (dB)		-20 dB						
Current consumption**	typ. mA	220	220	320	330	410	590	590
	max. mA	240	240	340	360	435	635	635
Mains supply (V A.C.)		220 +10/-15%, 50-60 Hz (type N)						
Remote feeding supply (V A.C.)		25...60, 50 Hz via input or output (type F)						
Remote fed path current (A)		≤ 5						
Operational temp. range (°C)		-30...+55						
Protection class		IP 65						
RF connectors		PG 11						

* at 60 dB IMR ref. DIN 45 004 B

** +120 mA with reverse channel amplifier

Plug-in modules

Type		VM 450-03	AM 450-18	AM 450-18
Description		Splitter	Tap-off	Tap-off
Attenuation	dB	3,5/3,5	0,8/12	0,5/18

Type		KE 450-00	KE 450-00-1	KE 450-/300-
Description		Equalizer	Equalizer	Equalizer
Attenuation	dB	—	0...10	E1 0...10

Type		RKE 25-00	REM 25-05	RVM 25-13
Description		Reverse channel	Reverse channel	Reverse channel
Gain	dB	—	—	13
Attenuation	dB	—	E2	—

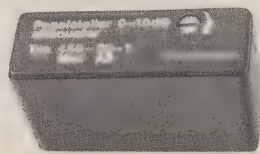
E1 see table page 91
E2 equalization 5 dB



Accessories for Trunkline Amplifiers SV-Series and Line Amplifiers LV-Series

Line equalizers with built-in attenuator 0...8 dB
KE 450-...-1 up to 450 MHz
KE 300-...-1 up to 300 MHz

Splitter and tap-off module, pluggable into SV-/LV-amplifiers



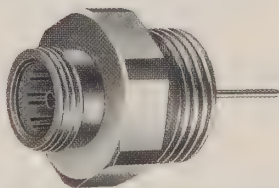
Type	Ordering code	Description
RKE 25-00	889 962-001	reverse channel insert for SV- and LV-series
RVM 25-13	889 954-001	reverse channel amplifier for SV- and LV-series
REM 25-05	889 967-001	reverse channel equalizer for SV- and LV-series
VM 450-03	889 970-001	splitter module (3,5 dB)
AM 450-12	889 971-012	tap-off module (1,0/12 dB)
AM 450-18	889 971-018	tap-off module (0,8/18 dB)
KE 450-00-1	976 452-001	attenuator module (10 dB)

Type	Ordering code	Description	Coaxial cable attenuation (dB)	Throughpass loss at upper frequency (dB)	Equalization (dB)
KE 450-03-1	976 468-003	A	3	0,2	2,1
KE 450-06-1	976 468-006	A	6	1,0	4,2
KE 450-09-1	976 468-009	A	9	1,0	6,5
KE 450-12-1	976 468-012	A	12	1,0	8,5
KE 450-15-1	976 468-015	A	15	1,2	11,0
KE 450-18-1	976 468-018	A	18	1,2	13,0
KE 450-21-1	976 468-021	A	21	1,3	15,0
KE 450-24-1	976 468-024	A	24	1,3	17,0
KE 450-27-1	976 468-027	A	27	1,3	19,0
KE 450-30-1	976 468-030	A	30	1,3	21,0
KE 300-03-1	877 440-003	B	3	0,8	1,9
KE 300-06-1	877 440-006	B	6	0,8	2,0
KE 300-09-1	877 440-009	B	9	0,8	5,5
KE 300-12-1	877 440-012	B	12	1,0	7,5
KE 300-15-1	877 440-015	B	15	1,0	10,0
KE 300-18-1	877 440-018	B	18	1,0	11,0
KE 300-21-1	877 440-021	B	21	1,0	13,0
KE 300-24-1	877 440-024	B	24	1,2	15,0
KE 300-27-1	877 440-027	B	27	1,2	17,0
KE 300-30-1	877 440-030	B	30	1,3	19,0

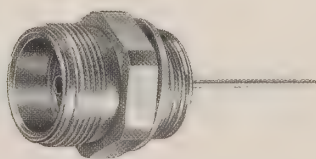
A = equalizer module 450 MHz

B = equalizer module 300 MHz

IEC Standard
☐ PG 11 screw-in sockets for IEC and 3,5/12 standard



3,5/12 Standard



Type	Kobu 75 M 14/PG 11	H 3,5/12 GKE
Ordering code	932 065-001	931 999-001

Split-Band Amplifier System of SLV-Series

- ☐ Line amplifiers 0,15–862 MHz

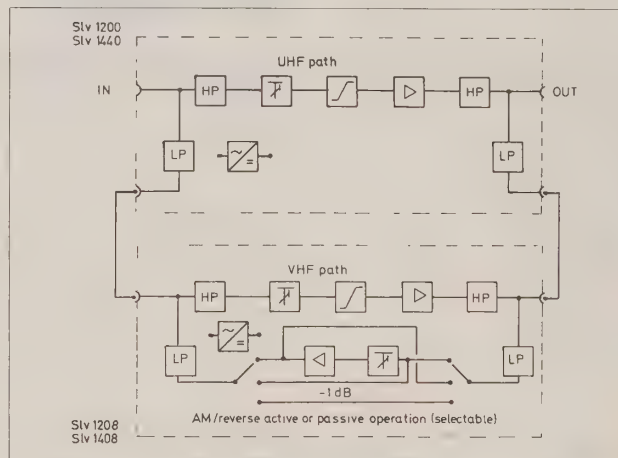
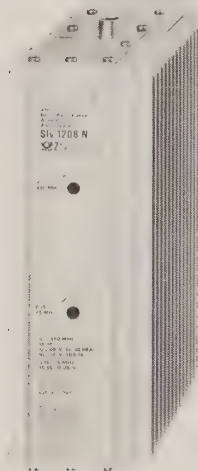
Application:

- ☐ For small and medium sized CATV networks
☐ For hotel systems, hospitals, airports, housing compounds, condominiums and highrises

Features:

- ☐ Modular wideband amplifier for VHF and UHF
☐ Single operation for AM + VHF or for UHF
☐ Push-pull output amplifier stages for high output levels
☐ Power supply units incorporated (220 V A.C. +10%, 50...60 Hz)

- ☐ Remote-feeding units available on request
☐ Forward AM radio operation 0,15...26,1 MHz active or passive or reverse channel operation 0,15...26,1 MHz active or passive
☐ Pluggable equalizer modules
☐ Built-in attenuators



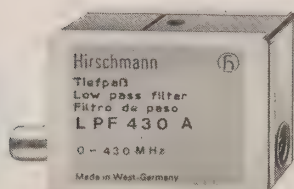
Type	Slv 1208 N	Slv 1408 N	Slv 1200 N	Slv 1440 N
Ordering code	944 606-001	944 603-001	944 605-001	944 604-001
Frequency	MHz 0,15–26,1 47–450	MHz 0,15–26,1 47–450	470–862	470–862
Gain	dB 15 18 +0,5	15 34 +0,5	16 +0,8	32 +1,0
Output level	dBμV 110** 122	110** 122	120*	120*
Noise figure	dB 7,5	6,5	8,0	6,0
Built-in attenuator	dB -20 -10	-20 -20	-10	-20
Internal DC current	mA 250	350	240	250

* at 60 dB IMR (DIN 45 004 B)

** at 54 dB IMR (DIN 45 004 K)

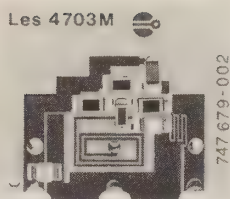
- ☐ Pluggable by-pass adapter with integrated low pass filter

- ☐ To be used when UHF-amplifiers of Slv 1200 N or Slv 1440N are in single operation with by-pass of 0,15...430 MHz



Type	Lpf 430 A
Ordering code	947 417-001

Accessories for Slv-Amplifiers, Equalizers



- ☐ Pluggable modules for the insertion into Slv-Amplifiers
- ☐ Les 47... M VHF equalizer for 47...450 MHz
- ☐ Les 63... M UHF equalizer for 470...630 MHz
- ☐ Les 86... M UHF equalizer for 470...862 MHz

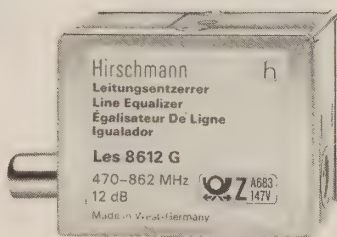
Type		Les 4703 M	Les 4706 M	Les 4709 M	Les 4712 M
Ordering code		947 341-003	947 341-006	947 341-009	947 341-012
Equalization	dB	3	6	9	12
Throughpass loss at upper frequency	dB	0,5	0,7	0,9	1,2
Attenuation	dB	4,0	8,0	13,0	17,0
Coaxial cable 450 MHz					

Type		Les 4715 M	Les 4718 M	Les 4721 M	Les 4724 M
Ordering code		947 341-015	947 341-018	947 341-021	947 341-024
Equalization	dB	15	18	21	24
Throughpass loss at upper frequency	dB	1,4	1,5	1,7	1,9
Attenuation	dB	21,0	25,0	30,0	34,0
Coaxial cable 450 MHz					

Type		Les 6303 M	Les 6306 M
Ordering code		947 342-003	947 342-006
Equalization	dB	3	6
Throughpass loss at upper frequency	dB	0,5	1,0
Attenuation	dB	16,2	32,7
Coaxial cable 630 MHz			

Type		Les 8603 M	Les 8606 M	Les 8609 M	Les 8612 M
Ordering code		947 340-003	947 340-006	947 340-009	947 340-012
Equalization	dB	3	6	9	12
Throughpass loss at upper frequency	dB	1,0	1,5	2,0	2,0
Attenuation	dB	9,3	18,6	27,9	37,2
Coaxial cable 862 MHz					

Equalizers Les 86... G series



- ☐ Built-in into shielded housing for plugging-in to the input of Slv 1200 N and Slv 1440 N amplifiers
- ☐ Frequency range 470...862 MHz

Type		Les 8603 G	Les 8606 G	Les 8609 G	Les 8612 G
Ordering code		947 343-003	947 343-006	947 343-009	947 343-012
Equalization	dB	3	6	9	12
Throughpass loss at upper frequency	dB	1,0	1,5	2,0	2,0
Attenuation	dB	9,3	18,6	27,9	37,2
Coaxial cable 862 MHz					

Distribution Amplifiers

- ☐ For the use in distribution networks of community antenna systems
- ☐ Not for use in headend stations

- ☐ Shielded metal housing for indoor installation
- ☐ Power supply unit incorporated 220 V A.C./50–60 Hz. Special power pack 127 V available on request

- ☐ Cable connection by coaxial plugs to IEC 169-2 (Kos 1)
- ☐ Meet specifications to German P.T.T.

Type**Ordering code**

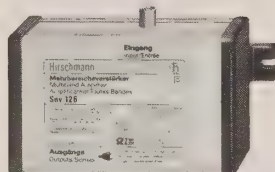
P.T.T. approval nr.

Symbol**Features****Snv 126**

944 537-002

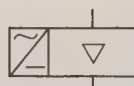
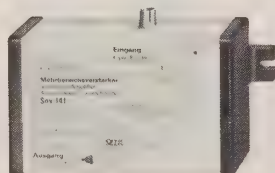
A 683 023 U

2 outputs

**Snv 141**

944 536-002

A 683 024 U

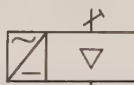
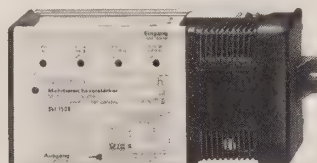
**Type****Ordering code**

P.T.T. approval nr.

Symbol**Features****Skl 1508**

944 538-003

A 683 050 U S



Adjustable attenuators for FM, VHF I, VHF III and UHF –18 dB each, for AM –30 dB. Max. supply current for active modules 105 mA.

Power supply unit electronically stabilized and short circuit proof. With terminal screw for remote feeding voltage to pre-amplifiers (24 V D.C. minus at the housing).

☐ Shielding rate
 up to 470 MHz ≥ 75 dB
 470–862 MHz ≥ 65 dB

		AM	VHF I, FM, LSC, VHF III, USC; ESC 40–470 MHz	UHF 470–862 MHz	Power* consump- tion	Dimensions
Gain	dB		18	18	1 W	195 x 120 x 65 mm
Max. output level	dB μ V		105	102		
Noise figure	dB		5,5	7		
Gain	dB	-0,5	28	28	1,2 W	195 x 120 x 65 mm
Max. output level	dB μ V	—	108	105		
Noise figure	dB	—	6,5	6,5		

		AM	FM	VHF I ch 2–4	VHF III ch 5–12	UHF ch 21–60	Power* consump- tion	Dimensions
Gain	dB	26	39	39	38	37	12 W full load 16 W	300 x 135 x 80 mm
Max. output level	dB μ V	111	119	119	119	119		
Noise figure	dB	—	8	8	9	10		

Blue bars indicate bands amplified
 ➤ Input with adjustable attenuator

* at 220 V A.C.

Distribution Amplifiers

- ☐ Preferably used as house connecting amplifiers
- ☐ For either indoor installation or outdoor installation in cabinets and pedestals

- ☐ Shielded metal housing
- ☐ Shielding rate ≥ 75 dB
- ☐ With incorporated power supply unit 220 VA.C./50–60 Hz.
- ☐ Special power pack 127 V

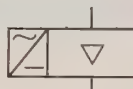
- available on request
- ☐ Cable connection by coaxial plugs to IEC 169-2 (Kos 1)
- ☐ Meet specifications to German P.T.T.

Type**Ordering code**

P.T.T. approval nr.

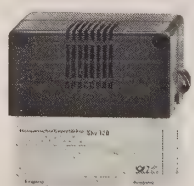
Symbol**Features**

Shv 111
944 529-101
 A 675 036 U



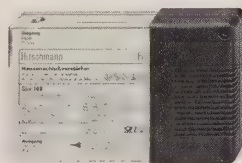
For equalization of frequency dependent cable attenuations a line equalizer module Les 45... can be plugged in.

Shv 120
944 530-101
 A 675 037 U



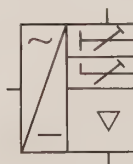
For equalization of frequency dependent cable attenuations a line equalizer module Les 45... can be plugged in.

Shv 140*
944 531-101
 A 675 035 U



For equalization of frequency dependent cable attenuations a line equalizer module Les 45... can be plugged in.

Shv 156*
944 579-002
 A 683 022 U



With built-in adjustable attenuator –10 dB and adjustable line equalizer for the equalization of frequency dependent cable attenuations up to 12 dB.

* Power pack electronically stabilized and short circuit proof

Fixed Line Equalizer with adjustable Attenuator

- ☐ Pluggable modules to Shv amplifiers
- ☐ For equalization of frequency dependent cable attenuations of 3,6 and 9 dB (fixed)
- ☐ Built-in adjustable attenuator –10 dB

- ☐ Operational frequency 40...470 MHz
- ☐ Shielding rate 75 dB
- ☐ Dimensions: 70 x 90 x 35 mm

Type	Les 4503	Les 4506	Les 4509
Ordering code	947 324-101	947 324-102	947 324-103
P.T.T. approval nr.	A 683 044 U	A 683 045 U	A 683 046 U
Fixed frequency dependent attenuation	3 dB	6 dB	9 dB

		Frequency range 40...470 MHz	Power* consump- tion	Dimensions
Gain	dB	11	2,5 W	105 x 105 x 46 mm
Max. output level				
– at 60 dB IMR	dB μ V	114		
– at 69 dB IMR	dB μ V	95		
Noise figure	dB	6		
Gain	dB	20	4 W	105 x 105 x 46 mm
Max. output level				
– at 60 dB IMR	dB μ V	114		
– at 69 dB IMR	dB μ V	95		
Noise figure	dB	6		
Gain	dB	27	6 W	169 x 105 x 46 mm
Max. output level				
– at 60 dB IMR	dB μ V	115		
– at 69 dB IMR	dB μ V	100,5		
Noise figure	dB	7		
Gain	dB	33	16 W	300 x 135 x 95 mm
Max. output level				
– at 60 dB IMR	dB μ V	123		
– at 69 dB IMR	dB μ V	108		
Noise figure	dB	7		

Input with adjustable attenuator

*at 220 V A.C.

Coaxial Cables



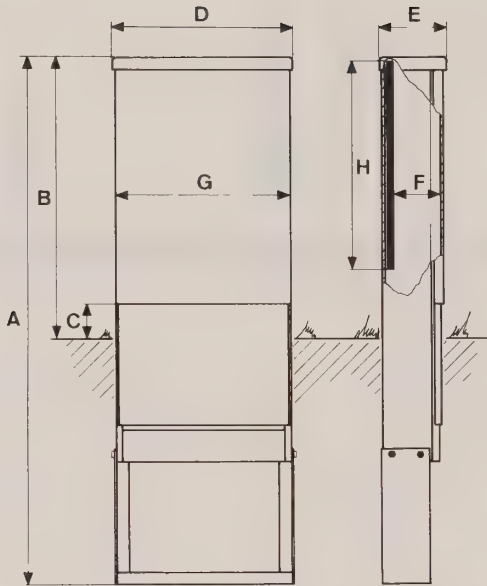
Type		Koka 711	Koka 712	Koka 713
Ordering code		198 711-...	198 712-...	198 713-...
Special features		–	double screened	resistant against ultra violet radiation
Installation		surface – flush – in conduits – in ducts	surface – flush – in conduits in ducts	surface – flush – in conduits in ducts – open air in tropical areas
Minimum radius for bending	once	35 mm	35 mm	35 mm
	more	300 mm	300 mm	300 mm
Material and dimensions	inner conductor	copper 0,7 mm Ø	copper 0,75 mm Ø	copper 0,73 mm Ø
	dielectric	polyethylene 4,3 mm Ø	polyethylene 4,8 mm Ø	polyethylene 4,5 mm Ø
	outer conductor (screen)	tinned copper 4,5 mm Ø	copper foil and copper texture 5 mm Ø	tinned copper screen 4,7 mm Ø
	outer cover	PVC white 6,3 mm Ø	PVC white 6,8 mm Ø	PVC black 6,5 mm Ø
Lowest admissible ambient temperature for installation		0°C	0°C	–5°C
Supply lengths		100/500 m	25/50/100/500 m	25/50/100/500 m
Weight per 100 metres		47,6 kg	63,2 kg	49,6 kg
Electrical Specifications				
Impedance		75 Ω ± 5%	75 Ω ± 5%	75 Ω ± 5%
D.C. resistance per 100 m	at +20°C	inner cond. 4,4 Ω	inner cond. 3,85 Ω	inner cond. 4,3 Ω
		outer cond. 1,15 Ω	outer cond. 1,0 Ω	outer cond. 1,25 Ω
		loop 5,55 Ω	loop 4,85 Ω	loop 5,55 Ω
	at +50°C	loop 6,55 Ω	loop 5,45 Ω	loop 6,55 Ω
Capacitance		69 pF/m	68 pF/m	68 pF/m
Reduction factor		0,66	0,66	0,66
Return loss	VHF-range	20 dB	23 dB	≥ 26 dB
	UHF-range	17 dB	20 dB	≥ 20 dB
Attenuation per 100 m of cable at +20°C	40 MHz	6,5 dB	5,0 dB	6,3 dB
	100 MHz	10,5 dB	8,4 dB	10,0 dB
	230 MHz	15,5 dB	12,5 dB	15,1 dB
	300 MHz	18,5 dB	14,5 dB	17,0 dB
	470 MHz	23,0 dB	18,5 dB	22,2 dB
	700 MHz	28,6 dB	22,9 dB	28,4 dB
	800 MHz	31,0 dB	25,2 dB	30,5 dB
900 MHz	33,0 dB	28,0 dB	32,0 dB	
Shielding rate		55,0 dB	75 dB	55 dB



Type		Koka 715	Koka 741	Koka 744
Ordering code		198 715-...	198 741-...	198 744-...
Special features		double screened resistant against ultra violet radioation	-	-
Installation		surface - flush - in conduits - in ducts - open air in tropical areas	surface - flush - in conduits - in ducts - underground in trenches	surface - flush - in conduits in ducts - underground in trenches
Minimum radius for bending	once	35 mm	105 mm	150 mm
	more	300 mm	575 mm	750 mm
	inner conductor	copper 0,75 mm Ø	copper 1,1 mm Ø	copper 1,8 mm Ø
	dielectric	polyethylene 4,8 mm Ø	polyethylene 7,3 mm Ø	polyethylene 11,5 mm Ø
	outer conductor (screen)	copper foil and copper texture 5 mm Ø	overlapping copper tape 7,8 mm Ø	overlapping copper tape 12 mm Ø
outer cover		PVC black 6,8 mm Ø	polyethylene black 10,6 mm Ø	polyethylene black 14,8 mm Ø
Lowest admissible ambient temperature for installation		0°C	+2°C	+2°C
Supply lengths		25/50/100/500 m	on request	on request
Weight per 100 metres		63,2 kg	117 kg	210 kg
Electrical Specifications				
Impedance		75 Ω ± 5%	75 Ω ± 5%	75 Ω ± 2%
D.C. resistance per 100 m	at +20°C	inner cond. 3,85 Ω	inner cond. 1,75 Ω	inner cond. 0,71 Ω
		outer cond. 1,0 Ω	outer cond. 0,56 Ω	outer cond. 0,37 Ω
		loop 4,85 Ω	loop 2,31 Ω	loop 1,08 Ω
	at +50°C	loop 5,45 Ω	loop 2,58 Ω	loop 1,21 Ω
Capacitance		68 pF/m	68 pF/m	68 pF/m
Reduction factor		0,66	0,66	0,66
Return loss	VHF-range	23 dB	≥ 26 dB	≥ 26 dB
	UHF-range	20 dB	≥ 23 dB	≥ 23 dB
Attenuation per 100 m of cable at +20°C	40 MHz	5,0 dB	3,1 dB	2,1 dB
	100 MHz	8,4 dB	5,3 dB	3,4 dB
	230 MHz	12,5 dB	8,3 dB	5,4 dB
	300 MHz	14,5 dB	9,6 dB	6,2 dB
	470 MHz	18,5 dB	12,4 dB	8,1 dB
	700 MHz	22,9 dB	15,7 dB	10,7 dB
	800 MHz	25,2 dB	17,0 dB	11,5 dB
	900 MHz	28,0 dB	18,4 dB	12,4 dB
Shielding rate		75 dB	75 dB	75 dB

Cables with lower attenuation values on request

Weatherproof Housings for Amplifiers



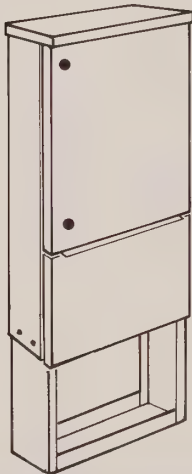
- ☐ Polyester coated steel
- ☐ With ventilation openings
- ☐ Supplied with mounting plate (HxG) and security lock

Housing Types

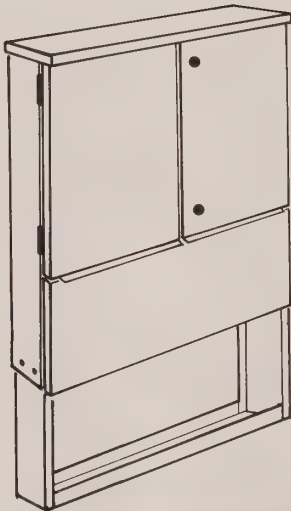
Type "a"



Type "b"

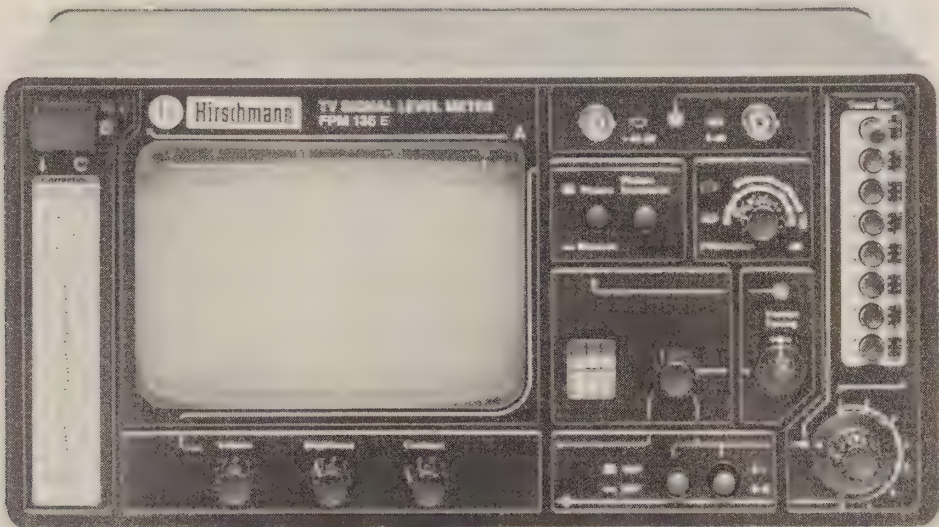


Type "c"



Type		SA 2 R	SA 3 R	SA 4 R	SA 6 R	SA 7 R	SA 10 R
Housing type		a	a	a	a	b	c
A	cm	130	140	140	140	172	172
B	cm	60	70	70	70	102	102
C	cm	9	9	9	9	27	27
D	cm	27	36	51	57	65	110
E	cm	12	18	18	22	26	26
F	cm	9	15	15	19	23	23
G	cm	25	34	49	54	67	105
H	cm	49	60	60	60	60	67

Level meter for
Television
FPM 136 E



Level meter for
AM/FM Radio
RPM 2000 E



General Remarks on Antenna Installations

A community antenna system is basically a coaxial cable network for distributing radio and television signals to a number of radio and TV receivers. On every single receiver, no matter how many of them are connected to a community antenna system, a perfect reception of both picture and sound should be obtained. It is therefore essential that all components used in the system are thoroughly matched. Furthermore, it must be observed that the receivers connected to a community antenna system do not interfere each other. Special components with a certain rate of decoupling should therefore be used in the installation in order to secure the necessary mutual attenuation between all receivers.

All components used in the antenna system cause losses to the signal received by the antenna and would bring down the signal to a non usable level. These losses are to be compensated by the appropriate types of amplifiers. Planning and installation of a well operating and economical community antenna system necessitate not only a full knowledge of the mechanical and electrical specifications of the material to be used but also the observance of the valid laws and regulations dealing with antenna installations in the country concerned. These regulations are different in various countries. In some countries they do not exist at all. The frame of this catalogue is not big enough to deal with all

antenna problems in detail. On the following pages we can give only some useful hints completed by tables of attenuations, conversions and frequencies. Further technical assistance will be provided by the factory or the local Hirschmann agency. Our planning engineers are always ready to set up complete plannings with wiring diagrams and lists of material. In this case it is, however, necessary to overhand us a plan of the building(s) to be equipped with an antenna system. Before planning or installing big CATV systems for the provision of whole villages or quarters of cities with antenna energy it is indispensable to get into contact with our antenna experts.

Units of Measurement

The commonly used units of measurement in the field of community antenna systems are

1. the microvolt (μV) or millivolt (mV)
2. the decibel (dB)
3. the $\text{dB}\mu\text{V}$ as unit for signal level

Microvolt and millivolt are universally accepted electrical units. The decibel, however, is a logarithmic ratio and is primarily used for determining gain or loss (attenuation) figures. If the decibel is used for measuring of levels the reference point for calculations is $1\ \mu\text{V}$ at $75\ \Omega$ and the abbreviation of this unit is $\text{dB}\mu\text{V}$.

Consequently the relations are as follows:

$1\ \mu\text{V}/75\ \Omega = 0\ \text{dB}\mu\text{V}$
 $1000\ \mu\text{V}/75\ \Omega = 1\ \text{mV}/75\ \Omega = 60\ \text{dB}\mu\text{V}$. Conversion table see page 106

Minimum Signal Values at the Antenna

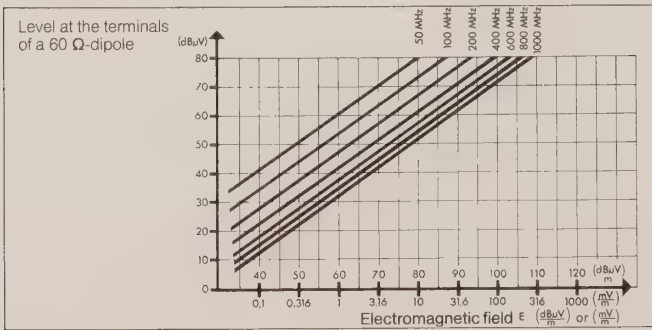
An absolute prerequisite for well operating community antenna systems is that signals with sufficient levels are available at the spot where the antenna array is to be established. This necessitates careful measurements of field intensity. Furthermore it should be observed that the signals will not be disturbed by

any obstacle or by ghosts. Table 1 indicates the values of the minimum field strengths and the corresponding levels. For signals below these values a distribution with satisfying results cannot be guaranteed. Sometimes the strength of the electromagnetic field is indicated in mV/m or in $\text{dB}\mu\text{V}/\text{m}$. Table 2 allows to convert these values into $\text{dB}\mu\text{V}$; that means the level obtained at the terminals of a corresponding $60\ \Omega$ dipole. If the impedance of the system is $75\ \Omega$, the results must be increased by $1\ \text{dB}\mu\text{V}$.

Table 1

Frequency range	Minimum field strength in $\text{dB}\mu\text{V}/\text{m}$	Minimum field strength in mV/m	Level ($\text{dB}\mu\text{V}$) at the terminals of $60\ \Omega$ dipole
FM Radio	48	0,25	40
VHF I	48	0,25	49
VHF III	57	0,7	47
UHF	67 to 72	2,2 to 4,0	53

Table 2



Minimum/Maximum Signal Values at the Receivers

When planning and installing antenna systems it should be observed that certain minimum and maximum signal levels at the receiver inputs should not be exceeded in order to avoid unsatisfying reception or over-amplification. The values as stated in the table below are according to German P.T.T. regulations, Amtsblatt Nr. 125.

Frequency range	Available level at the output of the connecting cords in dBμV	
	minimum	maximum
FM	40	80
Channels mainly used for stereo	50	80
VHF I	52	84
VHF III	54	84
UHF	57	84

Interference Suppression between Receivers

A source of trouble in distribution systems are the interferences caused by the oscillators of the receiver sets. Therefore minimum decoupling rates between receivers must be observed:

- 1) between TV-set and AM-radio-set: 66 dB;
- 2) between TV-set and FM-radio-set: 50 dB;

- 3) between TV-sets (excepted case 4): 22 dB;
- 4) between TV-sets, if channels in accordance to adjacent table are concerned: 55 dB.

Possibilities of interferences by fundamental and harmonic waves of oscillators in the TV-sets.

Attention:

Channel combinations 5/10, 6/11 and 7/12 must be absolutely avoided.

channel	could interfere channel
2	5, 27, 38, 49, 60
3	7, 21, 32, 44, 56
4	9, 25, 38, 50
5	10, 42
6	11, 45
7	12, 47
8	21, 50
9	22, 53
10	24, 55
11	26, 58
12	28, 60
21	26
22	27
23	28
24	29
25	30

channel	could interfere channel
26	31
27	32
28	33
29	34
30	35
31	36
32	37
33	38
34	39
35	40
36	41
37	42
38	43
39	44
40	45
41	46

channel	could interfere channel
42	47
43	48
44	49
45	50
46	51
47	52
48	53
49	54
50	55
51	56
52	57
53	58
54	59
55	60
56	61
57	62
58	63
59	64
60	65
61	66
62	67
63	68
64	69

Amplifiers and Converters The different Kinds of Amplifiers and their Application

1. Pre-amplifiers

They are used for increasing the level of received signals ahead of main amplifiers.

2. Channel amplifiers

In bigger installations it is recommended to use channel amplifiers because they can be operated with higher output levels. They furthermore offer a higher rate of selectivity in antenna systems with multichannel reception.

3. Multiband amplifiers

Multiband amplifiers work over several radio and TV bands. Available are types with either one or more inputs. Amplifiers with one input should be used only in conjunction with frequency selective components such as couplers, bandpass filters and/or rejection filters. In amplifiers with two or more inputs these selective components are incorporated allowing the direct connection of the antennas.

4. Repeater and Distribution Amplifiers

These amplifiers are for use in CATV-systems. They cover the whole frequency range distributed in a CATV network. When used in lines and trunk lines various types of these amplifiers can be equipped with the necessary access-

ories as equalizers, bridging modules and remote feeding components.

5. Converters

Converters are for transposing a channel received into another channel being more suitable to the antenna system. The reasons for conversion are:

- 5.1 Transposing a channel of higher frequency (UHF signal) into a lower frequency range with less distribution attenuation.
- 5.2 To avoid interferences caused by neighbouring channels.
- 5.3 To prevent interferences by direct radiation of strong local stations to the TV sets. This particular point must be carefully observed when planning bigger antenna installations.

The catalogue indicates the maximum admissible output levels for every type of amplifiers and converters.

These values must not be exceeded because otherwise you would run the risk of cross-modulations in the antenna system. In your plannings it is, therefore, indispensable to calculate carefully the necessary output level of the amplifier.

In the case of one-channel-amplifiers the value of the output level refers to the channel am-

plified and is equivalent to the r.m.s. voltage of the synchronising signal.

For wideband, multiband and radio amplifiers the values stated as maximum output level refer to two channels amplified. For the reception of more than two channels the maximum output level must be corrected according to table.

In most cases the signal levels of the FM radio stations are lower than those of TV stations and, therefore, can be neglected. If under special conditions, however, the levels are nearly equal the FM stations must be counted like TV channels. This is essential when multiband amplifiers, for example Sbe or Sbv, Shv types, are used in the installations.

Number of channels amplified	Correction to indicated values
2	0 dB
3	-2,0 dB
4	-3,0 dB
5	-4,0 dB
6	-5,0 dB
7	-5,5 dB
8	-6,0 dB
10	-7,0 dB
12	-8,0 dB

The Distribution

Distribution boxes

The distribution boxes of Vedo series serve for branching a main trunk-line into various equal trunk-lines. Outlet sockets connected to these trunk-lines must be exclusively of the Gedu series. The only exception makes the three way splitter Vedo 0636 which can also be used a terminal distributor and is the only one which allows the connection of both Gedu or Edu outlet sockets. It is also important to know that the distribution boxes Vedo 0423 and

Vedo 0636 have a higher mutual attenuation between the outputs. They offer an additional suppression of line reflections in reverse direction. Distribution boxes of Vg series are destined for the use in CATV systems.

Tap-off boxes

Tap-off boxes are used for branching-off secondary lines from throughgoing trunk-lines. The attenuation on the throughgoing trunk-line remains low whereas the attenuation at the outputs to the branched-off lines is high.

The decoupling between branched-off lines and trunk-line resulting hereof allows the connection of Edu sockets and also repeater amplifiers for extensions to the antenna system. The tap-off boxes are available with different rates of decoupling allowing their installation at the most suitable point in the distribution network. In order to prevent distortions caused by line reflections in longer lines, the use of tap-off boxes with incorporated directional circuits is strongly recommended.

The Installation

Indoor distribution network

The coaxial cables as described in this catalogue are suitable for either surface or flush mounting. For flush cabling it is always recommendable to install the cable in conduits (metal or plastic pipes). These conduits should be considered already in the plans of the building(s) to be constructed. Certainly, it will be helpful to discuss this fact with architects and consulting engineers.

Two basic versions of network installations are used in practice:

1. Tap-off system

In this system tap-off lines are branched off from trunk-lines to supply radio and TV signals to outlet sockets of Edu series. By means of high decoupling devices incorporated in the tap-off boxes no interferences caused by cable shorts or interruptions will effect the trunk-line and other subscribers.

This system is strongly recommended for installations in apartment houses, compounds of villas, hotels, schools and hospitals; also for antenna systems being installed into older buildings.

2. Loop-wired system

In this system the outlet sockets of Gedu series are connected directly to the trunk-lines. For preventing line reflections a number of 7 sockets connected to one trunk-line should not be exceeded. Loop-wired systems are more economical concerning the amount of material needed. However, manipulations to the outlet sockets by subscribers will interfere the antenna system. Loop-wired systems are preferably for installation in villas and inside of bigger apartments.

Important:

A terminal resistor R 75 must be connected to the last socket of each trunk-line for line termination.

Outdoor cabling

Outdoor cabling becomes necessary when various buildings will be connected to one community antenna system. According to local conditions given either underground or overhead cabling will be suitable. Outdoor cabling requires some special protection rules to be observed.

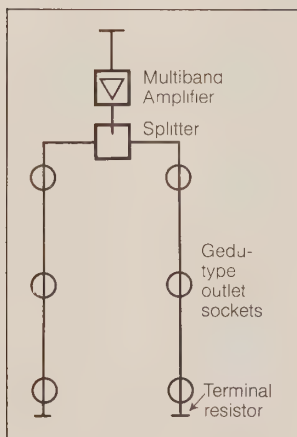
a) Underground cabling:

When cable is run underground it should be put into trenches in a depth of at least 0,60 m below surface. In order to avoid any mechanical damage to the cable it either must run in conduits or must be buried in sand and then be covered by cable stones as bricks or concrete plates etc. If mains cables are run in the same cable trench a safety distance of at least 0,30 m between antenna cable and mains cable must be observed.

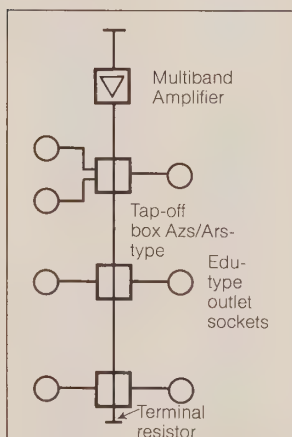
b) Overhead cabling:

Overhead running cable needs special supportings. Coaxial cables with moulded-in steel supporting cable are preferably used for this kind of cabling.

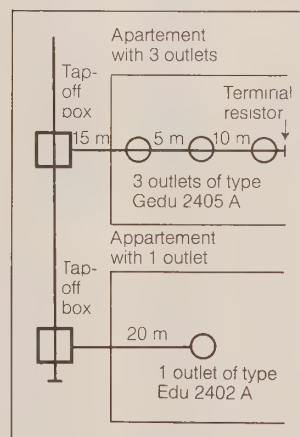
The Loop-wired System



The Tap-off System



Low loss extension from 1 outlet to up to 3 outlets in an apartment



Conversion Table

Level/Voltage

Voltage at 75 Ω μ V	Level dB μ V	Voltage at 75 Ω mV	Level dB μ V	Voltage at 75 Ω V	Level dB μ V
1	0	1	60	1	120
1,5	3,5	1,5	63,5	1,5	123,5
2	6	2	66	2	126
2,5	8,0	2,5	68	2,5	128
3	9,5	3	69,5	3	129,5
3,5	11	3,5	71	3,5	131
4	12	4	72	4	132
4,5	13	4,5	73	4,5	133
5	14	5	74	5	134
6	15,5	6	75,5	6	135,5
7	17	7	77	7	137
8	18	8	78	8	138
9	19	9	79	9	139
10	20	10	80	10	140
15	23,5	15	83,5		
20	26	20	86		
25	28	25	88		
30	29,5	30	89,5		
35	31	35	91		
40	32	40	92		
45	33	45	93		
50	34	50	94		
60	35,5	60	95,5		
70	37	70	97		
80	38	80	98		
90	39	90	99		
100	40	100	100		
150	43,5	150	103,5		
200	46	200	106		
250	48	250	108		
300	49,5	300	109,5		
350	51	350	111		
400	52	400	112		
450	53	450	113		
500	54	500	114		
600	55,5	600	115,5		
700	57	700	117		
800	58	800	118		
900	59	900	119		
1000	60	1000	120		

dB/voltage ratio

—	← dB →	+
1,0	0,0	1,0
0,94	0,5	1,06
0,89	1	1,12
0,84	1,5	1,19
0,8	2	1,25
0,75	2,5	1,33
0,71	3	1,41
0,67	3,5	1,5
0,63	4	1,6
0,6	4,5	1,67
0,56	5	1,78
0,53	5,5	1,88
0,5	6	2,0
0,47	6,5	2,12
0,45	7	2,24
0,42	7,5	2,37
0,4	8	2,5
0,38	8,5	2,66
0,35	9	2,82
0,33	9,5	3,0
0,32	10	3,16
0,28	11	3,55
0,25	12	4,0
0,22	13	4,5
0,2	14	5,0
0,18	15	5,62
0,16	16	6,3
0,14	17	7,1
0,125	18	8,0
0,11	19	8,9
0,10	20	10,0
0,089	21	11,2
0,08	22	12,5
0,071	23	14,1
0,063	24	16,0
0,056	25	17,8
0,05	26	20,0
0,045	27	22,4
0,04	28	25,0
0,035	29	28,2
0,032	30	31,6
0,028	31	35,5
0,025	32	40
0,022	33	45
0,02	34	50
0,018	35	56
0,016	36	63
0,014	37	71
0,0125	38	80
0,011	39	89
0,010	40	100
0,0056	45	178
0,0032	50	316
0,0018	55	562
0,001	60	1000

Transmission frequency
range for sound signals

	Frequency	Wave length
LW Long wave	150...285 kHz	2000...1050 m
MW Medium wave	520...1605 kHz	577...187 m
SW Short wave	3,95...26,1 MHz	76...11,5 m
FM (Band II)	87,5...108 MHz	3,4...2,8 m

Transmission frequency range
for TV signals (and digital
sound)

	Channel	Frequency (MHz)	Picture carrier (MHz)	Colour sub carrier (MHz)	1. Sound carrier ¹⁾ (MHz)
VHF I	2	47... 54	48,25	52,68	53,75
	3	54... 61	55,25	59,68	60,75
	4	61... 68	62,25	66,68	67,75
Lower special channels (LSC)	—	111...125 ²⁾	—	—	—
	S 4 ³⁾	125...132	126,25	130,68	131,75
	S 5 ³⁾	132...139	133,25	137,68	138,75
	S 6 ³⁾	139...146	140,25	144,68	145,75
	S 7	146...153	147,25	151,68	152,75
	S 8	153...160	154,25	158,68	159,75
	S 9	160...167	161,25	165,68	166,75
	S 10	167...174	168,25	172,68	173,75
VHF III	5	174...181	175,25	179,68	180,75
	6	181...188	182,25	186,68	187,75
	7	188...195	189,25	193,68	194,75
	8	195...202	196,25	200,68	201,75
	9	202...209	203,25	207,68	208,75
	10	209...216	210,25	214,68	215,75
	11	216...223	217,25	221,68	222,75
	12	223...230	224,25	228,68	229,75
Upper special channels (USC)	S 11	230...237	231,25	235,68	236,75
	S 12	237...244	238,25	242,68	243,75
	S 13	244...251	245,25	249,68	250,75
	S 14	251...258	252,25	256,68	257,75
	S 15	258...265	259,25	263,68	264,75
	S 16	265...272	266,25	270,68	271,75
	S 17	272...279	273,25	277,68	278,75
	S 18	279...286	280,25	284,68	285,75
	S 19	286...293	287,25	291,68	292,75
	S 20	293...300	294,25	298,68	299,75
Extended special channels (ESC)	S 21	302...310	303,25	307,68	308,75
	S 22	310...318	311,25	315,68	316,75
	S 23	318...326	319,25	323,68	324,75
	S 24	326...334	327,25	331,68	332,75
	S 25	334...342	335,25	339,68	340,75
	S 26	342...350	343,25	347,68	348,75
	S 27	350...358	351,25	355,68	356,75
	S 28	358...366	359,25	363,68	364,75
	S 29	366...374	367,25	371,68	372,75
	S 30	374...382	375,25	379,68	380,75
	S 31	382...390	383,25	387,68	388,75
	S 32	390...398	391,25	395,68	396,75
	S 33	398...406	399,25	403,68	404,75
	S 34	406...414	407,25	411,68	412,75
	S 35	414...422	415,25	419,68	420,75
	S 36	422...430	423,25	427,68	428,75
	S 37	430...438	431,25	435,68	436,75
	S 38	438...446	439,25	443,68	444,75
	S 39 ⁴⁾	446...454	447,25	451,68	452,75
	S 40 ⁴⁾	454...462	455,25	459,68	460,75
	S 41 ⁴⁾	462...470	463,25	467,68	468,75

1) The frequencies of the 2nd sound carrier
are calculated by adding 0,242 MHz to the
frequency of the 1st sound carrier

2) Digital sound
3) Reservation only admitted by German
P.T.T. frequency planning

4) Not released at present

Transmission frequency for
TV signals
(continued)

	Channel	Frequency (MHz)	Picture carrier (MHz)	Colour sub carrier (MHz)	1. Sound carrier ¹⁾ (MHz)
UHF Band IV/V	21	470...478	471,25	475,68	476,75
	22	478...486	479,25	483,68	484,75
	23	486...494	487,25	491,68	492,75
	24	494...502	495,25	499,68	500,75
	25	502...510	503,25	507,68	508,75
	26	510...518	511,25	515,68	516,75
	27	518...526	519,25	523,68	524,75
	28	526...534	527,25	531,68	532,75
	29	534...542	535,25	539,68	540,75
	30	542...550	543,25	547,68	548,75
	31	550...558	551,25	555,68	556,75
	32	558...566	559,25	563,68	564,75
	33	566...574	567,25	571,68	572,75
	34	574...582	575,25	579,68	580,75
	35	582...590	583,25	587,68	588,75
	36	590...598	591,25	595,68	596,75
	37	598...606	599,25	603,68	604,75
	38	606...614	607,25	611,68	612,75
	39	614...622	615,25	619,68	620,75
	40	622...630	623,25	627,68	628,75
	41	630...638	631,25	635,68	636,75
	42	638...646	639,25	643,68	644,75
	43	646...654	647,25	651,68	652,75
	44	654...662	655,25	659,68	660,75
	45	662...670	663,25	667,68	668,75
	46	670...678	671,25	675,68	676,75
	47	678...686	679,25	683,68	684,75
	48	686...694	687,25	691,68	692,75
	49	694...702	695,25	699,68	700,75
	50	702...710	703,25	707,68	708,75
	51	710...718	711,25	715,68	716,75
	52	718...726	719,25	723,68	724,75
	53	726...734	727,25	731,68	732,75
	54	734...742	735,25	739,68	740,75
	55	742...750	743,25	747,68	748,75
	56	750...758	751,25	755,68	756,75
	57	758...766	759,25	763,68	764,75
	58	766...774	767,25	771,68	772,75
	59	774...782	775,25	779,68	780,75
	60	782...790	783,25	787,68	788,75
	61	790...798	791,25	795,68	796,75
	62	798...806	799,25	803,68	804,75
	63	806...814	807,25	811,68	812,75
	64	814...822	815,25	819,68	820,75
	65	822...830	823,25	827,68	828,75
	66	830...838	831,25	835,68	836,75
	67	838...846	839,25	843,68	844,75
	68	846...854	847,25	851,68	852,75
	69	854...862	855,25	859,68	860,75

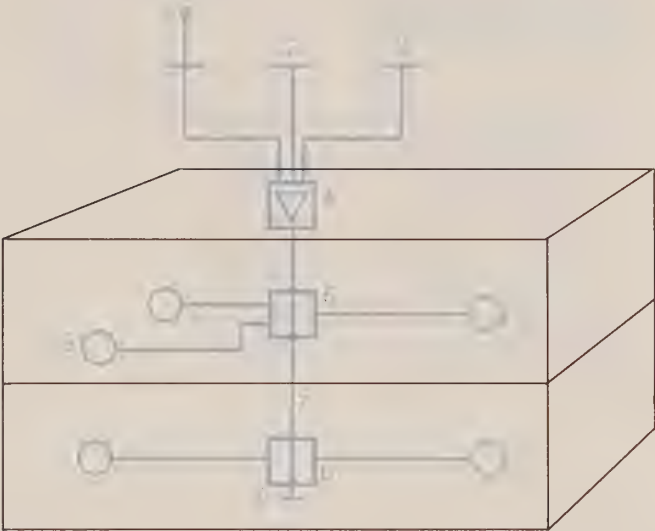
1) The frequencies of the 2nd sound carrier
are calculated by adding 0,242 MHz to the
frequency of the 1st sound carrier



Small sized Community
Antenna System for a Villa

□ For outdoor cabling ultra
violet resistant cable Koka 713
should be used

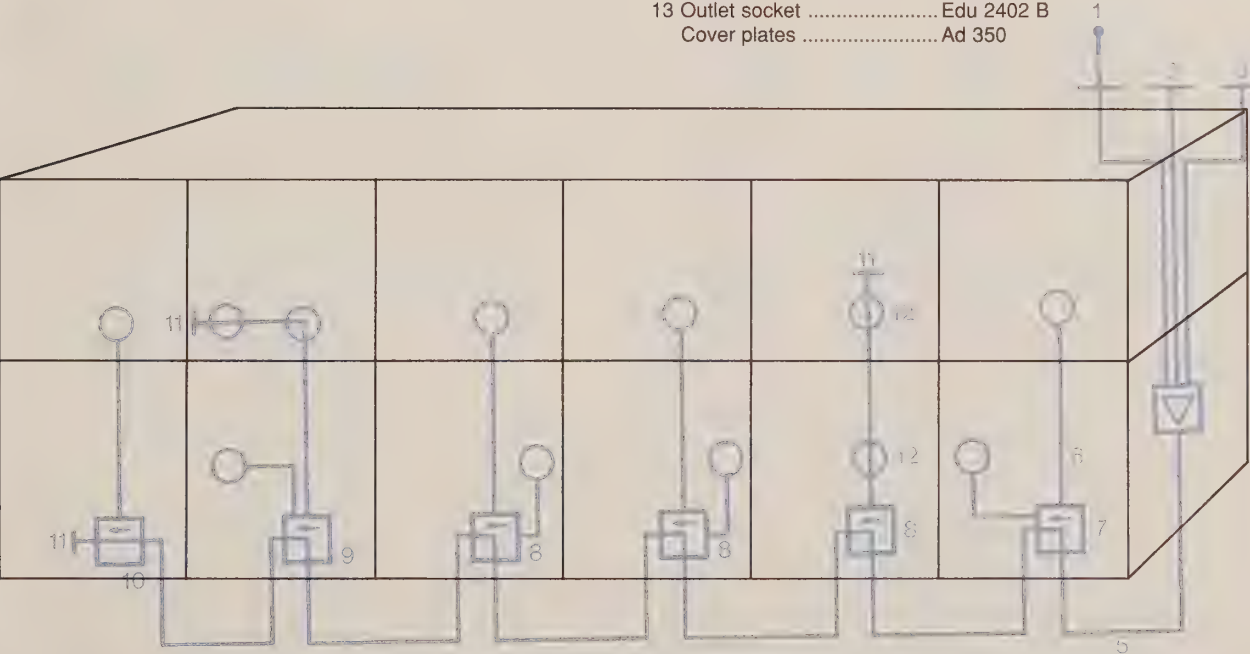
- 1 Radio antennaGema-type
- 2 TV antenna for VHF Fesa-type
- 3 TV antenna for UHF Fesa-type
- 4 Multiband amplifier Skl/Sbe/Sns-type
- 5 Tape-off box, 3-way, -15 dB .. Azs 1536
- 6 Tape-off box, 2-way, -15 dB .. Azs 1526
- 7 Coaxial cable, 0,7/4,3 Koka 711
- 8 Outlet socket Edu 2402 B
- + Cover plate Ad 350
- 9 Terminal resistor R 75



Small Community Antenna
System for a Number of Serial
Houses

□ Amplifier installed in weather
proof cabinet mounted to outer
wall of building. (Strongly re-
commended for servicing
works).

- 1 Radio antenna Gema-type
- 2 TV antenna for VHF Fesa-type
- 3 TV antenna for UHF Fesa-type
- 4 Amplifier Skl/Sbe/Sns-type
- 5 Underground coaxial cable . Koka 741
- 6 Coaxial cable, 0,7/4,3 Koka 711
- 7 Tap-off box, -20 dB Ars 2026
- 8 Tap-off box, -20 dB Ars 2013
- 9 Tap-off box, -15 dB Ars 1526
- 10 Tap-off box, -12 dB Ars 1213
- 11 Terminal resistor R 75
- 12 Outlet socket Gedu 2405 B
- 13 Outlet socket Edu 2402 B
- Cover plates Ad 350

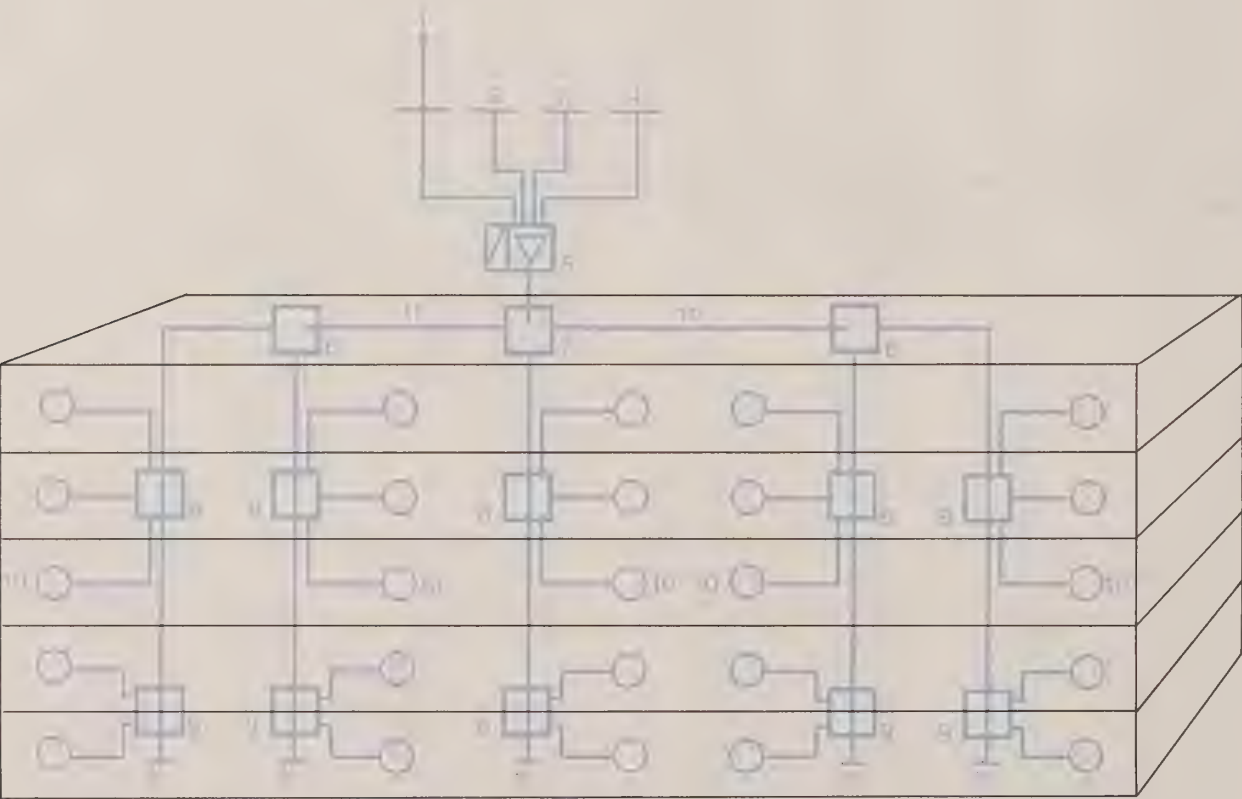


Medium sized Community
Antenna System for a Block
of Flats with 25 Outlets

- ☐ Distribution of AM/FM radio and TV in Band I, III and UHF
- ☐ Horizontal cabling of coaxial cable on upper floor preferably in the ceiling
- ☐ Distribution boxes and tap-off boxes located in the installation duct at accessible spots
- ☐ Each apartment will have its own feedline, leading in a conduit from the installation duct to the outlet socket in the living room
- ☐ The antenna array will be installed on flat roof on outer wall or on the exit of the roof staircase
- ☐ Special wall mounting brackets of type Mh 50 are available
- ☐ The headend amplifier will be mounted into a lockable cabinet with sufficient ventilation

- ☐ The cabinet can be installed in the staircase or in the installation duct on upper floor
- ☐ Due to extremely high temperatures and high humidity in tropical areas the headend amplifier should not be installed in open air on flat roof

- 1 Radio antenna for AM/FM –Gema-type
- 2 TV antenna for Band I –Fesa-type
- 3 TV antenna for Band III –Fesa-type
- 4 TV antenna for UHF –Fesa-type
- 5 Headend amplifierSkl/Sbe/Sns-type
- 6 Distribution box, - 4 dBVedo 0423
- 7 Distribution box, - 6 dBVedo 0636
- 8 Tap-off box, - 15 dBAzs 1536
- 9 Tap-off box, - 15 dBAzs 1526
- 10 Outlet socketEdu 2402 B
- 11 Coaxial cable, 0,7/4,3Koka 711
- 12 Terminator resistorR 75



**Small CATV Systems
for 2 Blocks with
18 Floors each**

□ Distribution of Radio and TV programmes to 72 subscribers
Block No. 1

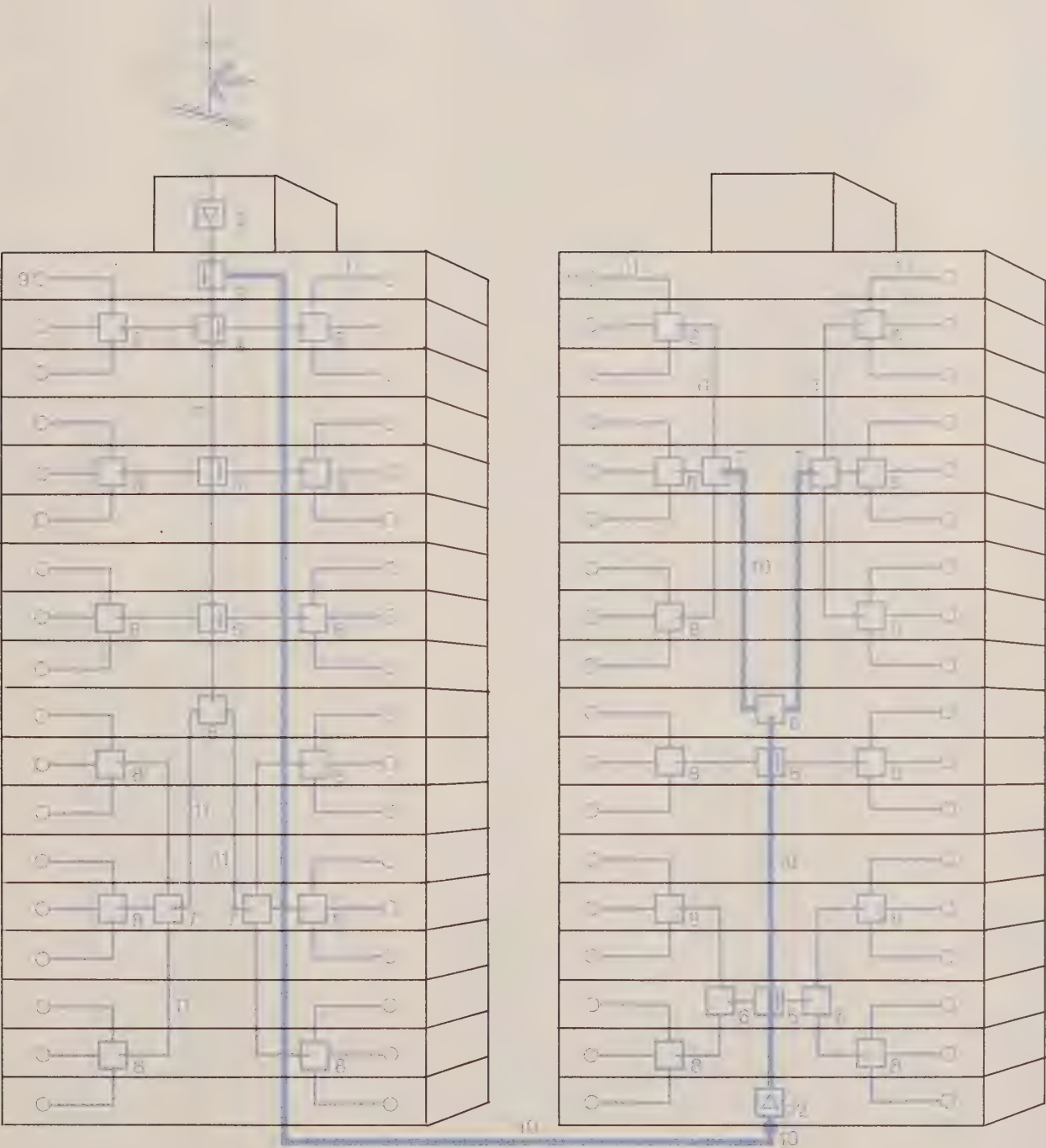
Antenna array and headend fixed on flat roof (elevator house).

Block No. 2

is connected to block no. 1 by means of underground coaxial cable. Distribution amplifier located in duct of ground floor.

□ Vertical cabling in installation duct. A conduit with 13 mm Ø will run from here into each apartment leading the coaxial cable to the outlet socket

- 1 Radio and TV antennas Gema/Fesa-types
- 2 Headend Amplifier station Lvk/Lze/Lza modules
- 3 Tap-off box, 1-way, -20 dB Ars 2013
- 4 Tap-off box, 2-way, -20 dB Ars 2026
- 5 Tap-off box, 2-way, -15 dB Ars 1526
- 6 Splitter, -4 dB Vedo 0423
- 7 Distribution box, 3-way, -6 dB ... Vedo 0636
- 8 Distribution box, 3-way, -9 dB ... Vedo 0936
- 9 Outlet socket, flush type Edu 2402 B
- 10 Coaxial cable 1,1/7,3 Koka 741
- 11 Coaxial cable, 0,7/4,3 Koka 711
- 12 Repeater amplifier Skl 1508
- 13 Cable connecting box Kvs 741

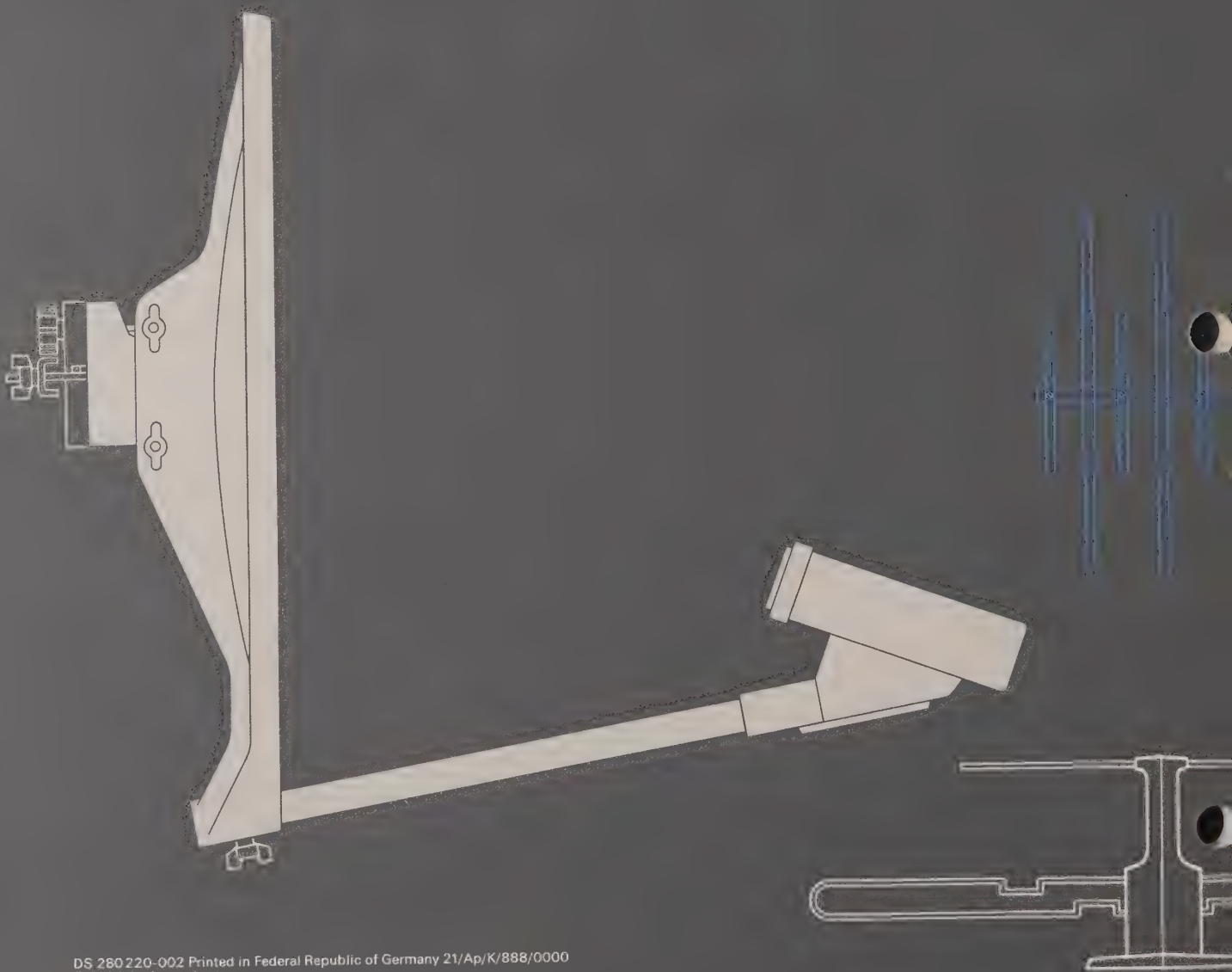


Type	Page	Type	Page	Type	Page	Type	Page
ABZ 102 F	82	Esw 0421 K 21...60	30	IK 120	23	Les 4703 M	93
ABZ 134 A	82	Esw 0422 K 21...60	30			Les 4706 M	93
ABZ 154 A	82	Esw 0423 K...+K..	30	Kaf 1306	43	Les 4709 M	93
Ad 350	52	Esw 0424 K...+K..	30	Kaf 1308	43	Les 4712 M	93
Ad 450	52	Ewf 7022	32	Kaf 1312	43	Les 4715 M	93
AM 450-12	90/91	Ewr 7212	32	Kama 42	23	Les 4718 M	93
AM 450-18	90/91			Kari 72	23	Les 4721 M	93
Antenol 10	21	Fdg 75/10	41	Kaspi 12	23	Les 4724 M	93
APS 330	67	Fdg 75/12	41	Kaspi 120	23	Les 6303 M	93
Ar 20	52	Fdg 75/18	41	KE 300-03-1	91	Les 6306 M	93
ARF 1220	84	Fdg 75/3	41	KE 300-06-1	91	Les 8603 G	93
ARF 1240	84	Fdg 75/6	41	KE 300-09-1	91	Les 8603 M	93
ARF 1820	84	Fekab 751/150	52	KE 300-12-1	91	Les 8606 G	93
Arg 0815	42	Fekab 751/300	52	KE 300-15-1	91	Les 8606 M	93
Arg 0925	43	Feko 30 A	9	KE 300-18-1	91	Les 8609 G	93
Arg 1045	43	Fesa 3 D-U 40	22	KE 300-21-1	91	Les 8609 M	93
Arg 1315	42	Fesa 4 R-U 41	22	KE 300-24-1	91	Les 8612 G	93
Arg 1425	43	Fesa 10 BH-U 40	22	KE 300-27-1	91	Les 8612 M	93
Arg 1445	43	Fesa 1234 Mb	17	KE 300-30-1	91	Lgp 3	71
Arg 2015	42	Fesa 2 Ra/K 2-4	5	KE 450-/300-	90/91	Lmo 106	77
Arg 2025	43	Fesa 3 Ra/K 2-4	5	KE 450-00	90	Lmo 116 A	78
Arg 2045	43	Fesa 309 AN K ..	7	KE 450-00-1	90/91	Lmo 116 B	78
Ars 1213	36	Fesa 312 AN K ..	8	KE 450-03-1	91	Lne 701	71
Ars 1526	36	Fesa 313 AN K ..	8	KE 450-06-1	91	Lne 1501	71
Ars 2013	36	Fesa 4 Ra/K 2	6	KE 450-09-1	91	LP-Lmo 001	85
Ars 2026	36	Fesa 4 Ra/K 3	6	KE 450-12-1	91	Lpf 430 A	92
AVM 2208	86/87	Fesa 4 Ra/K 4	6	KE 450-15-1	91	Lpi 5700	83
Azs 1413	36	Fesa 809 N 68	11	KE 450-18-1	91	Lsw 6045	83
Azs 1526	36	Fesa 813 N 48	12	KE 450-21-1	91	LV 2217 F	89
Azs 1536	36	Fesa 813 N 60	12	KE 450-24-1	91	LV 2217 N	89
Azs 1546	38	Fesa 815 N 37	13	KE 450-27-1	91	LV 2221 F	89
Azs 2013	36	Fesa 815 N 48	13	KE 450-30-1	91	LV 2221 N	89
Azs 2026	36	Fesa 815 N 60	13	Kobu 75 M 14/PG 11	91	LV 2233 F	89
Azs 2036	36	Fesa 817 N 37	14	Kok 1	53	LV 2233 N	89
Azs 2046	38	Fesa 817 N 48	14	Kok 3	53	LV 2238 F	89
Azs 2546	38	Fesa 817 N 60	14	Koka 711	98	LV 2238 N	89
		Fesa 817 N 68	15	Koka 712	98	Lvb 490	72
Beg 42 U	20	Fesa 818 N 60	15	Koka 713	98	Lvb 2202	72
Beg 50 U	20	Fetra 2	22	Koka 715	99	Lvb 4830	72
Beg 60 U	20	Fld 50	20	Koka 741	99	Lvb 7830	72
BGT 019 K TOP	85	FP-Lne 1501	85	Koka 744	99	LVH 2217 F	89
Bw 5	31	FP-Lvu 001	85	Kokwi 1	53	LVH 2217 N	89
Bwa 351 K 21 ... 60	25	FP-Lza 001	85	Kokwi 300	53	LVH 2233 F	89
Bwa 451 K 21 ... 60	25	FP-Lze 001	85	Kos 1	53	LVH 2233 N	89
Bwa 551 K.. + K..	25	FPM 136 E	101	Kos 3	53	LVH 2238 F	89
Bwa 581 K 21 ... 60	25	FVS 030	82	Koswi 1	53	LVH 2238 N	89
Bwa 582 K 21 ... 60	25	FVS 030 D	82	Koswi 100	53	Lvk 235 S K 5...K 12	73
Bwa 583 K 21 ... 60	25	Fw 1	31	Koswi 300	53	Lvk 311 S K 2...K 4	73
Bwa 584 K 21 ... 60	25			Kuf 7500	84	Lvk 331 S K 5...K 12	73
Bws 202	27	Gedu 2400 B	48	Kug 7061	45	Lvk 431 S K 5...K 12	73
Bws 401	27	Gedu 2405 B	48	Kvb 61	41	Lvk 445 S K 21...K 60	73
		Gedu 2411 B	48	Kvs 1	65	Lvk 545 S K 21...K 60	73
Dab 42-2	20	Gedu 2491 B	48	Kvs 741	41	Lvkr 311 S K 2...K 4	76
Dab 50-2	20	Gema 1 KR	4	Kws 011	29	Lvkr 431 S K 5...K 12	76
Dab 60-1	20	Gema 3 KR	4	Kws 0311	29	Lvkr 545 S K 21...K 60	76
		Gema 4 KR	4	Kws 0312	29	Lw 76	71
Edu 1401 A	50	Gema 5 KR	4	Kws 0313	29	Lza 261 K..	75
Edu 2402 B	50	Gnt 42/2500	83	Kws 0314	29	Lza 263 K..	75
Edu 2404 BR	50	Gt 8 V	21	Kws 0315	29	Lza 264 K..	75
Erb 50	20	Gw 1375	44	Kws 0316	29	Lza 267 KS..	75
Es 6	21			Kws 0410	29	Lza 268 KS..	75
Esv 2320 K 7	62	H 3.5/12 GKE	91	Kws 0412	29	Lze 416 K..	75
Esv 2320 K 8	62	HCB 450 A	46	Kws 0511	31	Lze 436 K..	75
Esv 2331 K ..	62	Hit Awn 60 B 3/4	24	Kws 0512	31	Lze 446 K..	75
Esv 2421 K 21-K 60	62	Hit Awn 264/60 B 3/4	24	Kws 0513	31	Lze 476 KS..	75
Esv 2422 K.. + K..	62	Hit Fesa 4 BV	9			Lze 486 KS..	75
Esv 2424 K.. + K..	62	Hit Fesa 13 BV	9	Les 4503	96		
Esv 3421 K.. + K..	62	Hit Fesa 243	16	Les 4506	96	Maka 15	21
Esw 9+R	27	Hit Fesa 805 Alu	16	Les 4509	96	Mf 63	20



Type	Page	Type	Page	Type	Page	Type	Page
Mg 1	21	Sbu 2033 K../ K..	63	Sperr 745	34	TVM 7244 K... + K...	80
Mh 50	20	Sbu 2041 K../ K..	63	Sperr 753	34	TVM 7266	80
Mkr 211 K...	69	Sbu 2043 K../ K..	63	SSY 4	44		
Mkr 233 K...	69	Sbv 112 Bb	61	SSY 6	44	U1	3
Mkr 245 K...	69	Sbv 119	61	SSY 1775	44	U3	3
MT-L...-001	85	Sbv 122	61	SSY 3330	44	U4	3
MT-Lne 1501	85	Sbv 132 Bb	61	Stema 51/200	19	U5	3
Muf 1	45	Sbv 142 Bb	61	Stema 51/300	19	U8	3
Muf 2	45	Schima 48/400	18	Stema 420/150	19		
Muf 3	45	Schima 48/500	18	Stema 420/200	19	Vdr 751	41
Muf 10	45	Schima 48/600	18	Stema 420/300	19	Vedo 0423	38
Mvr 131 K 5...K 12	68	Schima 60/601	18	SV 2226 AFO	87	Vedo 0636	38
Mvr 132 K 5+7	68	Shv 111	96	SV 2226 AFU	87	Vedo 0746	38
Mvr 240 Bs	68	Shv 120	96	SV 2226 ANO	87	Vedo 0936	38
Mvr 241 K 21...K 60	68	Shv 140	96	SV 2226 ANU	87	Vg 0425	42
Mvr 242 K...+K..	68	Shv 156	96	SV 2226 MF	87	Vg 0745	42
		Skl 1508	94	SV 2226 MN	87	Vms 0631	66
R 75	52	Skl 450	58	SVA 2226 AFO	87	Vms 0633 N	66
Rac 63	23	Slv 1200 N	92	SVA 2226 AFU	87	VM 450-03	90/91
REM 25-05	86/87	Slv 1208 N	92	SVA 2226 ANO	87	Vr 061	38
RKE 25-00	89/90/91	Slv 1408 N	92	SVA 2226 ANU	87	Vr 081	38
RPM 2000	101	Slv 1440 N	92	SVA 2226 MF	87	Vr 121	38
RVM 25-13	86/87	Sna 1	65	SVA 2226 MN	87	VRF 0420	84
		Snf 330	67	SVG 2000	87	VRF 0740	84
Sa 1	65	Sng 24/350	69	SVM 2226 A	86	VRT 042 A	82
SA 2 R	100	Sng 2480	69	SVM 2226 AO	87	VRT 042 F	82
SA 3 R	100	Snn 250	67	SVM 2226 AU	87	VRT 042 M	82
SA 4 R	100	Sno-U 40	67	SVM 2226 M	86/87	VRT 063 A	82
SA 6 R	100	Sns 321	56	SVS 220	86	VRT 063 F	82
SA 7 R	100	Sns 421	56	SVS 25/60	86	VRT 074 A	82
SA 10 R	100	Sns 425	56			VRT 074 F	82
SB 1	65	Sns 430	56	TNA 262 A	81	Vrz 092 D	40
SB-Hit Fesa 6 BV	9	Sns 441	58	TNA 952 B	81	Vsv 042	40
SB-Hit Fesa 7 BO 60	16	Sns 4418	58	Trag 36	22	Vzv 420	40
SB-Hit Fesa 10 BV	9	Snv 126	94	Trag 53	22		
SB-Hit Fesa 12 BO 60	16	Snv 141	94	Trag 56	22	Wak 246	26
SB-Hit Fesa 16 BO 60	16	Sperr 7 CB	34	TVM 7101 K...	80	Wak 247	26
Sbe 440	55	Sperr 24	33	TVM 7103 K...	80	Wak 301	24
Sbe 440/8	55	Sperr 29	33	TVM 7104 K...	80	Wak 333	26
Sbe 450	55	Sperr 91	33	TVM 7106	80	Wak 4310	26
Sbe 450/8	55	Sperr 92	33	TVM 7211 K... + K...	80	Wak 4312	26
Sbe 471	55	Sperr 701	34	TVM 7213 K... + K...	80	Wak 4314	26
Sbe 471/8	55	Sperr 703	34	TVM 7214 K... + K...	80		
Sbu 2013 K../ K..	63	Sperr 704	34	TVM 7233 K... + K...	80	Zgv 76	40
Sbu 2031 K../ K..	63	Sperr 705	34	TVM 7234 K... + K...	80	Zva 134	40

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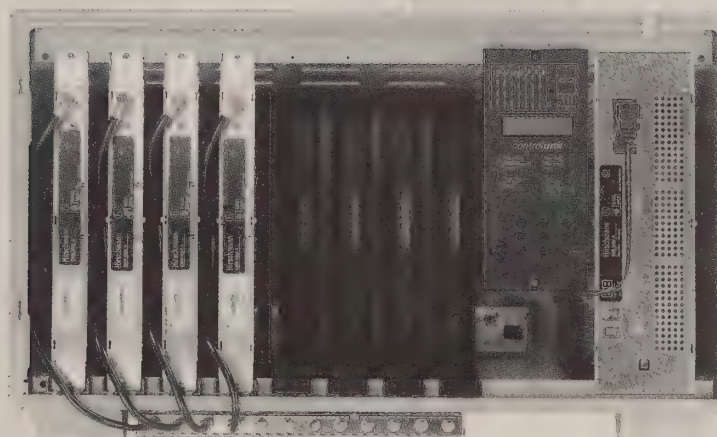
Hirschmann



Satellite channel processing CSE 3000

The low-cost solution

for feeding satellite
programmes into small
and medium-sized
community antenna
systems



Satellite channel processing

"Cable TV la maison"

PRO 7

Satellite channel processing unites the convenience of cable TV with the individuality of satellite reception.

At the push of a button, the CSE 3000 system relays any programme package transmitted via satellite to any connected TV screen through the distribution cable in the building.

Its technical structure is particularly orientated to the requirements of small and medium-sized community antenna systems for upwards of around 10 users. This is why satellite channel processing is of particular interest for multi-family dwellings, small hotels and boarding houses also homes and sanitariums.

The advantages speak for themselves:

low-cost and technically simple
no additional equipment needed for reception; all the signals fed into the cable are available directly through all antenna connections (exception: tuners for DSR reception).
no monthly inflation-linked cable utilization fees; the community of users pays for the one-time cost of the system.

no installation of an additional cable; one cable network distributes new and old channels together.

no forest of dishes on the building; one single parabolic antenna suffices for all users.

convenient and user-friendly
minimum annoyance due to installation; in most cases installation involves no need for considerable conversion work that would signify a dirt and noise nuisance to users.

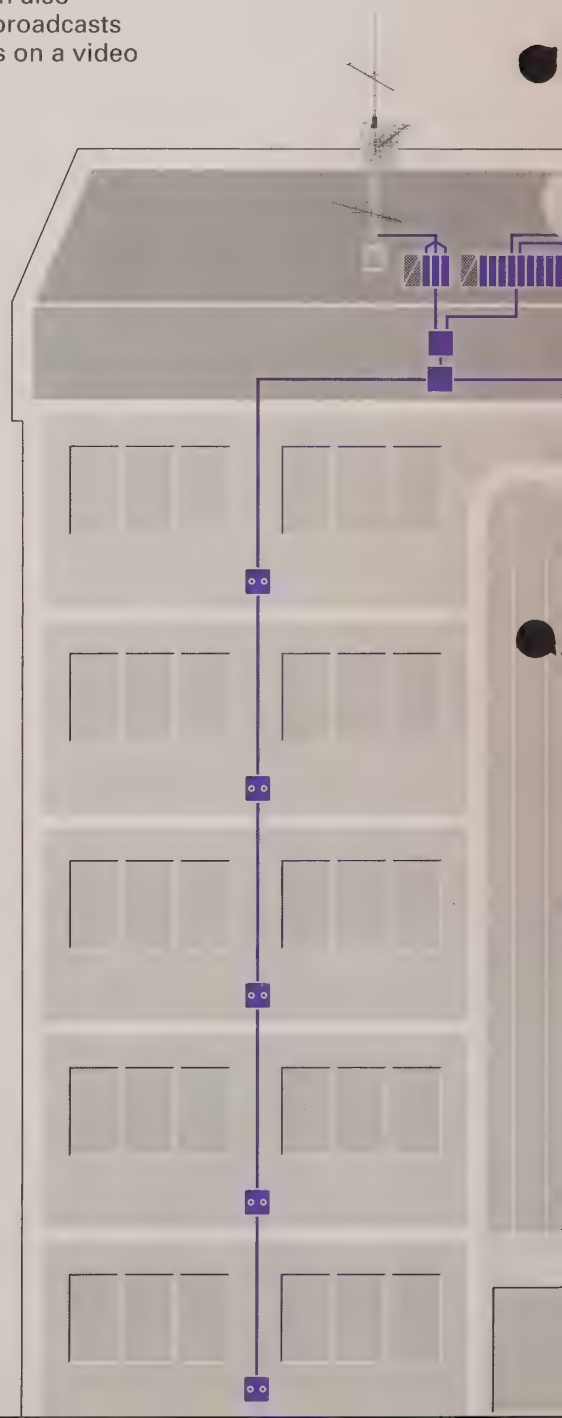
minimum readjustments required on the tuner; the channel assignments specified by the fitter as the result of central infeed of channels have to be made on the TV set and on any connected video recorder.

individual and flexible
no outsiders decide what channels you will receive; the community of users decide on the following depending on their needs:

- ☐ the satellites
- ☐ the channels (including Pay TV and digital satellite radio in CD quality)
- ☐ the language variants (adjustable in some channels)

no fixed range of channels; later changes or additions can be made easily and swiftly.

no restricted channel reception; every user at every connection can freely choose his individual channel from the ones offered in the distribution network, independently of his neighbours, and can also record other broadcasts parallel to this on a video recorder.



Hirschmann CSE 3000

The low-cost professional system for small and medium-sized community antenna systems

The CSE 3000 satellite processing system can be used economically by upwards of 10 users, thus closing the gap between simple SAT IF distribution and complex CATV/SMATV technology. At the same time, the system offers professional technology and a well thought-out, practical concept at a comparably low cost:

easy-to-plan, clear basic structure modular system consisting of a basic unit and channel conditioning elements:

- ☐ The basic unit contains the power supply unit, control unit and 8 slots for channel modules.
- ☐ A choice of 4 different module cartridges is available for each channel and free slot: Band I, Band III, DSR and OIRT standard.

individually adaptable, variable principle any system configuration possible thanks to free combination of modules:

- ☐ Each basic unit can already be operated with less than 8 channels and can be connected in parallel to further units.
- ☐ At the same time, the configuration can be modified easily and even at a later date.

easily operable control unit central control of the overall system by microprocessor:

all necessary parameters are not entered by means of adjustment elements on the channel modules, but on a keypad with a display on the central control unit.

easy-to-connect, compact design reduced amount of components and cable connections:

- ☐ Thanks to integration of the input distribution and output panels in the basic unit there is no need for additional distribution elements.
- ☐ Only one single cable is needed to connect the closed plug-in channel modules to the input panel; it is ready-made and included in delivery.

sturdy design for swift installation sturdy, lockable steel housing:

It is simply set up on the spot or secured to the wall by means of the included securing material.

design for easy service and maintenance reliable storage of all the parameters of all slots in the central processing unit:

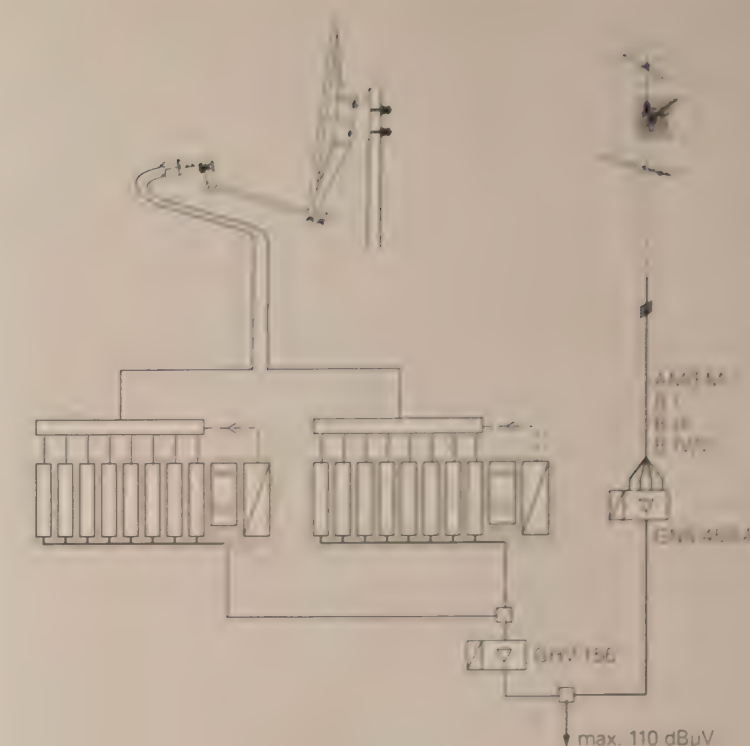
- ☐ Replaced or inadvertently unplugged modules do not require reprogramming.
- ☐ The control station's computer interface also allows input of complete channel assignments from an external memory.

configuration easy to change and expand future-oriented system design:

- ☐ Transponder changes affecting certain channels can be entered easily on the keypad by changing the central processing unit's programmed channel allocations.
- ☐ Using a retrofit kit, a decoder connection (submin. D socket) can be added easily and on the spot to existing channel modules without much effort (video surveillance also possible).

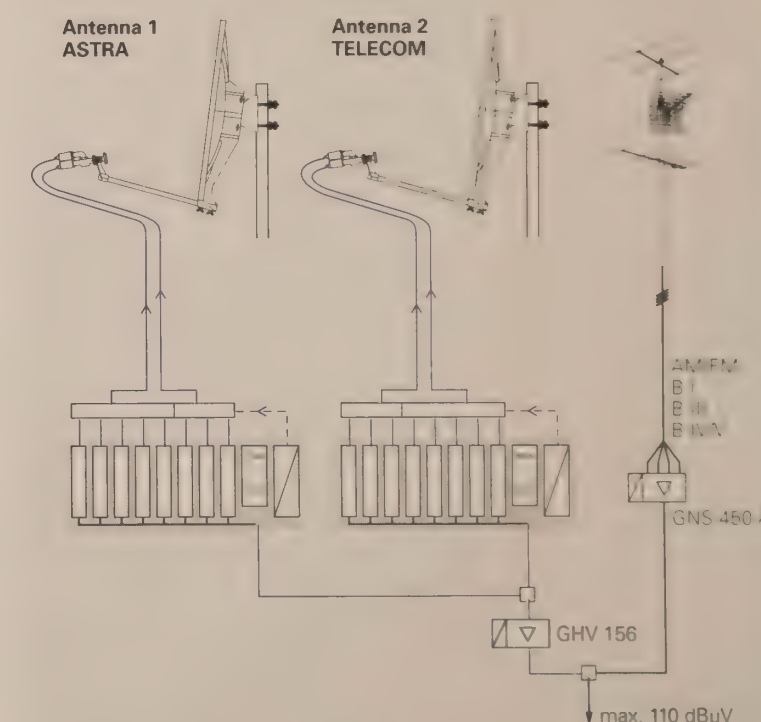
Programme diversity

A free choice in your own network



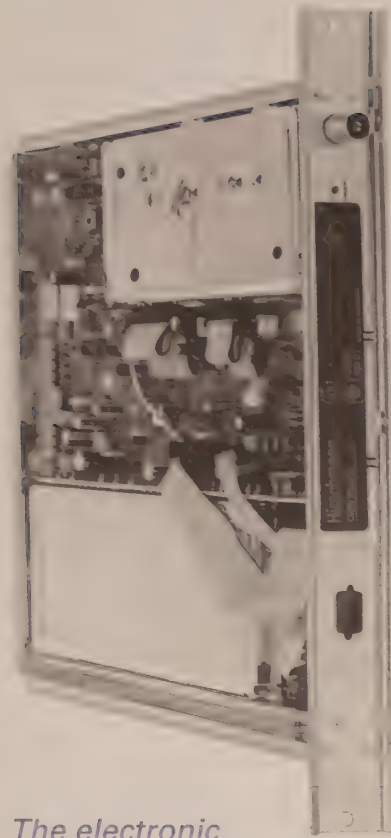
Several basic units can be used to distribute more than 8 satellite channels.

A system can also be equipped with two and more parabolic reflectors if reception of differently positioned satellites is required (e.g. ASTRA and TELECOM).



The basic satellite channel processing configuration consists of a parabolic reflector (85 cm minimum diameter) and a basic unit. The system can feed up to 8 channels into the distribution network in addition to the ones transmitted terrestrially.

The compact solution Contemporary technology in a handy form



The electronic insights of a channel module

Retrofit kit for decoder connection (submin. D socket)



Although the principle of channel-selective signal conditioning is also based on complex CATV/SMATV technology, it was possible to optimize design compactness in the CSE 3000 system so as to ensure that the head station belonging to an entire system fits easily in one single handy housing. Modern electronics is the key to this high degree of compression:

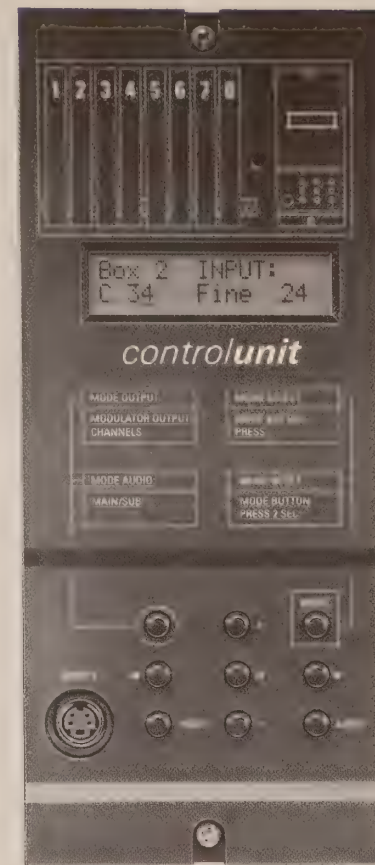
One module uniting the following components suffices for each channel:

- ☐ Satellite tuner
- ☐ Demodulator
- ☐ Audio and video conditioning
- ☐ Single side band modulator (suitable for use with adjacent channels thanks to adjacent channel suppression ≥ 58 dB)
- ☐ Slot for a retrofit kit for connecting a decoder (submin. D socket for Pay TV descramblers or video insertion; special accessory).

The required adjustment data for all channel modules is programmed once only on the control unit:

- ☐ Input/output frequency, which can be chosen freely (input 950 - 1750 MHz, output Ch 2 - Ch 4, S8 - S20 including Ch 5 - Ch 12)
- ☐ Video deviation can be selected between 16 MHz (Astra) and 22.5 MHz (other satellites)
- ☐ IF bandwidth 16/24 MHz; 8 MHz spacing as a rough aid to tuning before fine tuning
- ☐ Video polarity can be switched between positive/negative
- ☐ Audio subcarrier, main and secondary sound carriers can be chosen freely (5 - 9.99 MHz)
- ☐ Deemphasis switchable between 50 fs, 75 fs and J17.

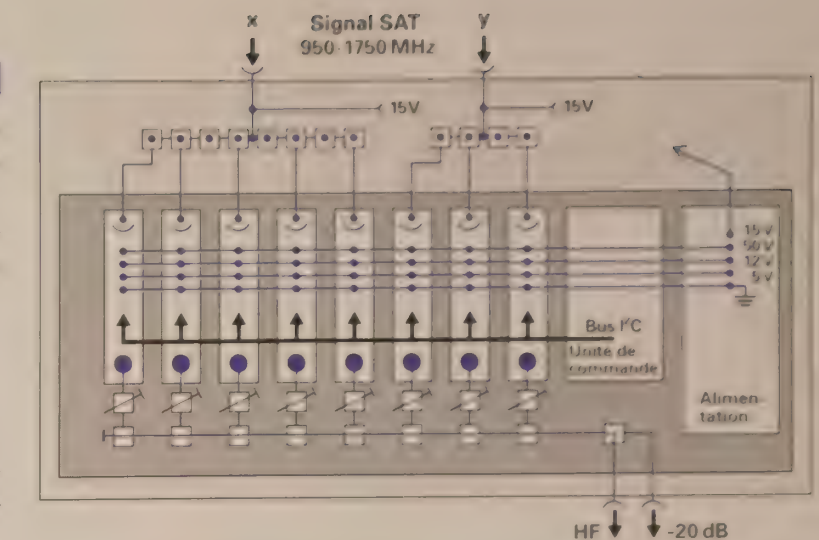
The key strokes required for this purpose are easily understandable and can be entered easily on the clearly arranged control unit. Alternatively through the I²C bus socket the data can be loaded by floppy disk from an external computer.



Central control unit with display, keypad and I²C socket

Basic unit

Type	CSS 3000 A	
Order number	960 639-001	
Cartridges (boxes)	Up to 8	
Reception frequency	950 - 1750 MHz range (C 00 - C 99)	
Channel spacing, input	8 MHz	
Input distributor	Input A:	Input B:
	8 fold	4 fold
	61 - 94 dBfV	56.5 - 89.5 dBfV
	14 dB	9.5 dB
Input level	75 j	
Transmission loss	75 j	
Input/output impedance	75 j	
Input level per cartridge	47 dBfV - 80 dBfV	
Remote supply for fuse	15 V/800 mA; 1 A slow-blow	
reception system	479.5 MHz	
Intermediate frequency	16/24 MHz, switchable	
IF bandwidth	16/24 MHz, switchable	
Video	Frequency range	20 Hz - 5 MHz
	Deviation	16/22.5 MHz/V, switchable
	Polarity	Positive/negative, switchable
Audio	Audio carrier-frequency range	5.00 - 9.99 MHz
	Audio IF bandwidth	Main: 280 kHz/Sub: 130 kHz, switchable
Deemphasis	Main: 50 fs/75 fs/J17	
Channel spacing, output	7 MHz VHF (BI, S 8 - S 20, BIII), CCIR standard B 8 MHz VHF (BIII), OIRT standard D	
Adjacent channel suppression	≥ 58 dB	
S/N ratio for C/N > 14 dB	> 49 dB	
Cartridge output level	110 dBfV	
Operating level adjustment range (output of the HF panel)	75 - 90 dBfV (individually adjustable for each channel)	
Mains voltage	200...260 V AC; 50/60 Hz	
Power consumption	approx. 70 W at full capacity including remote supply	
Permissible ambient temperature	20 xC to +50 xC	
Dimensions W x H x D	650 x 390 x 280 mm	
Weight	approx. 25 kg (full capacity)	



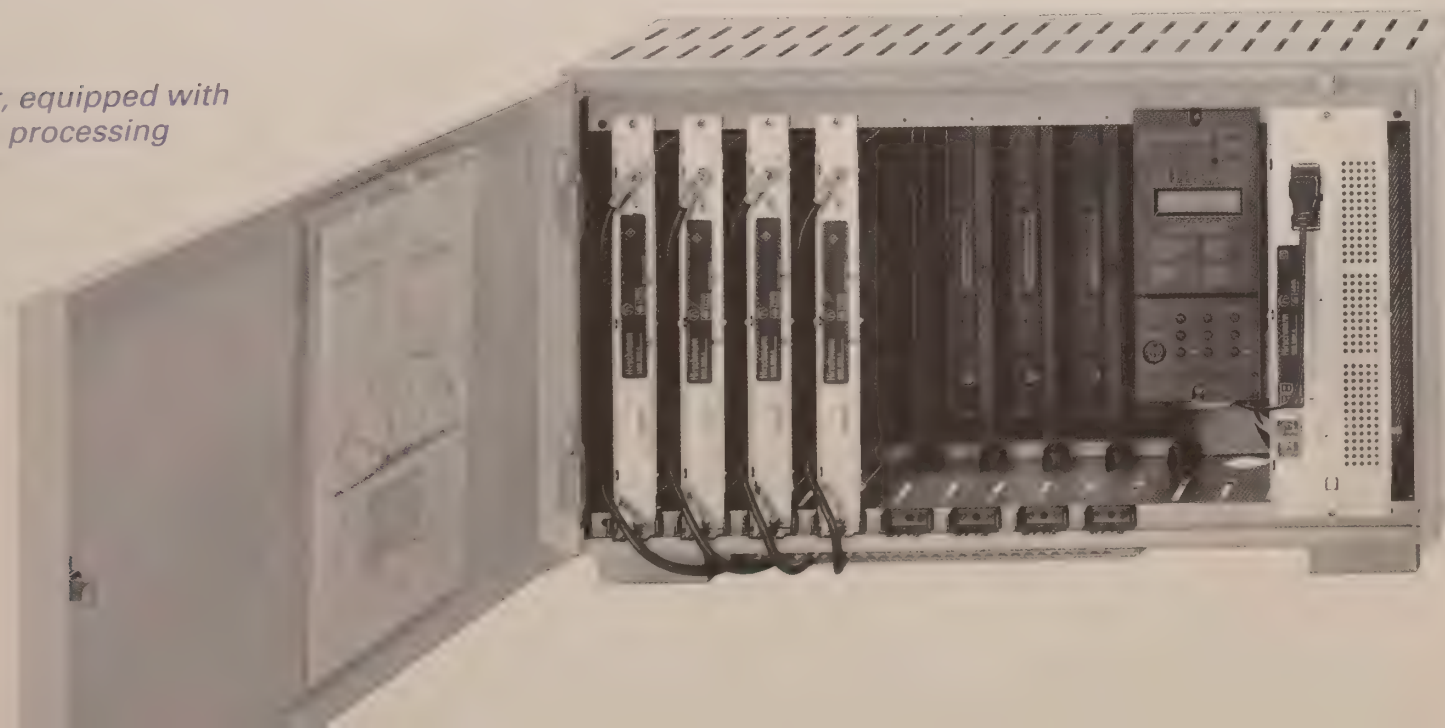
Channel conditioning modules

Type	CKM 3910 A
Order number	960 641-001
Conversion	1st IF → Band I, Ch 2 - Ch 4
Type	CKM 3930 A
Order number	960 640-001
Conversion	1st IF → Band III, Ch 5 - Ch 12, S 8 - S 20
Type	CKM 3931 A
Order number	960 642-001
Conversion	1st IF → OIRT Band III, R 6 - R 12
Type	CUM 3016 A
Order number	960 643-001
Conversion	1st IF → 118 MHz

Retrofit kit for decoder connection (submin. D socket)

Type	CDN 3800 A
Order number	960 656-001

Basic unit, equipped with 4 channel processing modules



Richard Hirschmann
GmbH & Co
Postfach 110
7300 Esslingen
Germany

**Preisliste
zu den Katalogen
DS 2 und DS 230
„Stationäre
Empfangs-
systeme“**

**Price List
Catalogues
DS 2 and DS 230
"TV Antennas, Radio
Antennas, Community
Antenna Systems"**

Gültig ab / valid from

1. April 1992

Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each	Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
ABZ 102 CF	961 015-002	140,—	ARG 2025	947 349-001	92,—
ABZ 134 C	961 317-002	141,—	ARG 2045	947 352-001	105,—
ABZ 154 C	961 318-002	146,—	ARP 186	947 461-001	135,—
AD 350	910 460-001	1,85	ARS 0912 A	947 472-001	30,50
AD 951	910 947-001	1,85	ARS 1024 A	947 475-001	58,—
AD 952	910 945-001	1,85	ARS 1034 A	947 478-001	63,50
ADP 75/60	910 718-001	4,10	ARS 1044 A	947 481-001	70,—
AFC 0811	947 359-001	15,—	ARS 1212 A	947 485-001	189,—
AFC 1211	947 360-001	15,—	ARS 1213	947 280-002	25,50
AFC 1611	947 361-001	15,—	ARS 1264 A	947 484-001	131,—
AFC 2011	947 362-001	15,—	ARS 1319	947 332-001	31,60
AFC 0921	947 363-001	19,50	ARS 1412 A	947 473-001	34,50
AFC 1221	947 364-001	19,50	ARS 1424 A	947 476-001	47,—
AFC 1621	947 365-001	19,50	ARS 1429	947 331-001	42,80
AFC 2021	947 366-001	19,50	ARS 1434 A	947 479-001	63,70
AFC 1641	947 367-001	42,—	ARS 1444 A	947 482-001	94,—
AFC 1861	947 368-001	57,—	ARS 1526	947 315-002	44,50
AFC 2081	947 369-001	68,—	ARS 2012 A	947 474-001	41,50
AM-Connector	910 918-001	26,—	ARS 2013	947 322-002	35,—
AM 450-12	889 971-012	46,—	ARS 2024 A	947 477-001	60,50
AM 450-18	889 971-018	46,—	ARS 2026	947 323-002	50,—
AM 550-12	889 971-012	46,—	ARS 2034 A	947 480-001	57,50
AM 550-18	889 971-018	46,—	ARS 2044 A	947 483-001	109,—
ANH 207 C	961 327-002	520,—	AST 006	878 903-001	295,—
ANH 209 C	961 328-002	619,—	AVE 97 RKS	846 751-001	34,70
ANH 308 A K ... ¹⁾	961 334-...	474,—	AVM 2206	976 513-003	805,—
ANH 310 A K ... ¹⁾	961 381-...	581,—	AVM 2208	976 513-001	622,—
ANH 411 A K ... ¹⁾	961 336-...	719,—	AVM 2214	976 513-002	686,—
ANH 414 A K ... ¹⁾	961 338-...	923,—	AZS 1413	947 181-002	24,30
ANTENOL 10	912 784-000	3,—	AZS 1526	947 186-002	35,80
APS 330	944 574-001	108,—	AZS 1536	947 190-002	44,70
AR 20	910 382-001	2,80	AZS 1546	962 770-501	33,70
ARF 1210	976 614-004	141,—	AZS 2013	947 182-002	22,40
ARF 1220	976 614-001	176,—	AZS 2026	947 187-002	36,20
ARF 1240	976 614-002	198,—	AZS 2036	947 191-002	44,80
ARF 1810	976 614-005	141,—	AZS 2046	962 771-501	33,70
ARF 1820	976 614-003	176,—	AZS 2546	962 772-501	33,70
ARG 0815	947 344-001	73,—	BEG 42 U	810 971-000	3,80
ARG 0925	947 347-001	95,—	BEG 50 U	810 909-000	4,10
ARG 1045 E	947 350-001	165,—	BEG 60 U	810 910-000	4,10
ARG 1315	947 345-001	71,—	BEG 89 U	913 690-001	9,70
ARG 1425	947 348-001	91,—	BEL 89 U	913 692-001	12,20
ARG 1445	947 351-001	108,—	BER 89 U	913 691-001	12,20
ARG 2015	947 346-001	72,—	BFC 4571		5340,—

¹⁾ Bei Bestellung bitte den gewünschten Kanal angeben

²⁾ Bei Bestellung bitte die gewünschte Kanalkombination angeben

¹⁾ Please specify channel when ordering

²⁾ Please specify channel combination when ordering

Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each	Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
BK 135	975 358-001	197,—	DVB 7002		18,—
BKU 450	948 359-001	240,—	DVB 7003		18,—
BNCS 5962 A	947 441-001	10,—	DVR 7010		100,—
BW 5	947 290-001	1,15	EDU 2402 C	947 423-001	10,—
BWA 351 K.. ¹⁾	945 142-...	57,—	EDU 2403 C	947 444-001	10,70
BWA 451 K.. ¹⁾	945 143-...	67,—	EDU 2404 C	947 424-001	9,40
BWA 551 K..+K.. ²⁾	945 144-...	83,—	EDU 2901 CL	947 427-001	13,70
BWA 581 K.. ¹⁾	945 145-...	87,—	EDU 2901 CR	947 428-001	13,70
BWA 582 K.. ¹⁾	945 146-...	87,—	EDU 2901 FL	947 448-001	13,80
BWA 583 K.. ¹⁾	945 147-...	87,—	EDU 2901 FR	947 449-001	13,80
BWA 584 K.. ¹⁾	945 148-...	87,—	EDU 2902 C	947 429-001	8,20
BWS 202	947 338-001	42,50	EM 50	938 500-050	2.353,—
BWS 277	947 370-001	43,50	EM 55	938 500-055	2.353,—
BWS 401	947 260-002	54,—	EM 60	938 500-060	2.353,—
BWS 2900	947 330-001	28,50	EM 65	938 500-065	2.353,—
BWS 2900 F	947 377-001	32,—	EM 70	938 500-070	2.353,—
CKM 3910 A	960 641-001	564,—	EM 75	938 500-075	2.353,—
CKM 3930 A	960 640-001	564,—	EM 80	938 500-080	2.353,—
CKM 3931 A	960 642-001	564,—	EM 85	938 500-085	2.353,—
CKR 2100 F	947 468-001	84,50	EM 90	938 500-090	2.353,—
CKR 2400 F	947 462-001	120,—	EM 95	938 500-095	2.353,—
CMU 4000 A	960 540-001	830,—	ERB 50	910 397-000	4,70
CMU 4400 A	960 487-001	383,—	ERB 89	913 697-001	8,90
CSD 4100 A	960 622-001	630,—	ES 6	942 234-001	5,50
CSF 1510 A	961 036-001	503,—	ESV 2320 K 7... K 8 ²⁾	944 591-...	83,50
CSG 1201 A	813 534-001	130,—	ESV 2331 K.. ¹⁾	944 594-...	86,50
CSG 1802 A	813 521-001	211,—	ESV 2421 K.. ¹⁾	944 595-...	99,50
CSG 2401 A	813 627-001	420,—	ESV 2422 K.. + K.. ²⁾	944 596-...	113,—
CSK 2011 A ¹⁾	961 031-...	815,—	ESV 2424 K.. + K.. ²⁾	944 597-...	127,—
CSK 2012 A ¹⁾	961 032-...	686,—	ESV 3421 K.. + K.. ²⁾	944 581-...	194,—
CSK 2013 A ¹⁾	961 033-...	798,—	ESW 9 + R	947 293-002	45,50
CSK 2027 A ¹⁾	961 043-...	2.299,—	ESW 0414 D	947 459-...	115,—
CSK 4000 A	960 484-001	560,—	ESW 0421 C K.. ¹⁾	947 406-...	36,70
CSK 4001 A	960 498-001	490,—	ESW 0421 K.. ¹⁾	947 336-...	35,90
CSK 4002 A	960 624-001	980,—	ESW 0422 K.. ¹⁾	947 337-...	50,50
CSK 4400 A	960 485-001	350,—	ESW 0423 K.. + K.. ²⁾	947 334-...	48,—
CSS 1511 A	961 035-001	366,—	ESW 0424 C K.. + K.. ²⁾	947 407-...	60,—
CSS 1531 A	961 034-001	507,—	ESW 0424 K.. + K.. ²⁾	947 335-...	64,50
CSS 3000 A	960 639-001	1.170,—	ESW 0425 K..+K..+K.. ²⁾	947 456-...	94,—
CSV 1511 A	961 030-001	527,—	EWf 7022	910 686-001	13,30
CSV 4161 A	960 482-001	610,—	EWR 108	947 375-001	28,60
CSV 4261 A	960 483-001	880,—	EWR 7212	910 728-001	27,50
CZFC 02	947 397-001	206,—	FDFC 3	947 445-003	15,30
DAB 42-2	601 025-000	3,95	FDFC 6	947 445-006	15,30
DAB 50-2	601 026-001	4,60	FDFC 10	947 445-010	15,30
DAB 50-6	601 113-000	16,10	FDG 75/3	947 107-003	8,30
DAB 50-8	601 094-000	12,20	FDG 75/6	947 107-006	8,30
DAB 50-9	601 064-000	12,20	FDG 75/10	947 107-010	8,30
DAB 60-1	910 822-001	9,30	FDG 75/12	947 107-012	8,30
DNV 111 A	944 696-001	113,—	FDG 75/18	947 107-018	8,30
DNV 111 F	944 697-001	151,—	FEKAB 750/150	910 490-001	5,10
DNV 216 A	944 695-001	157,—	FEKAB 750/300	910 490-002	6,10
DNV 216 B	944 695-002	157,—	FEKAB 751/150	910 957-001	7,30
DNW 201 A	944 694-001	123,—	FEKAB 751/300	910 957-002	8,50
DSF 1511	944 600-001	148,—	FESA 2 Ra K 2-4	912 650-534	78,50
DSF 1515	944 635-001	184,—	FESA 3 D - U 40	810 687-501	9,70
DSF 1521	944 599-001	223,—	FESA 3 Ra K 2-4	912 651-534	96,—
DSF 1525	944 673-001	163,—	FESA 4 R - U 41	811 130-501	14,30
DSZ 2006	944 702-001	95,—	FESA 4 Ra K 2	912 652-502	115,—
DSZ 2405	944 588-001	95,—	FESA 4 Ra K 3	912 652-503	115,—
DSZ 2415	944 631-001	239,—	FESA 4 Ra K 4	912 652-504	115,—
DSZ 2425	944 632-001	362,—	FESA 9 Fa	912 155-501	89,—

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²⁾ Bei Bestellung bitte die gewünschte Kanalkombination angeben

¹⁾ Please specify channel when ordering

²⁾ Please specify channel combination when ordering

Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each	Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
FESA 10 BH - U 40	811 907-000	10,—	GHV 156 F	944 661-001	497,—
FESA 12 A	910 809-501	101,—	GHV 157 A	944 658-001	414,—
FESA 218 LDK	910 501-501	107,—	GHV 157 B	944 662-001	414,—
FESA 309 AN K.1)	910 838-...	58,50	GHV 158 A	944 698-001	623,—
FESA 312 AN K.1)	910 837-...	76,50	GHV 158 B	944 699-001	623,—
FESA 313 AN K.1)	910 836-...	90,—	GNF 320 N	944 651-001	101,—
FESA 616 SN 55	910 787-501	76,50	GNS 320 A	944 652-001	66,50
FESA 809 N 69	910 856-501	45,—	GNS 420 A	944 653-001	76,50
FESA 813 N 48	910 858-501	72,50	GNS 425 A	944 654-001	125,—
FESA 813 N 60	910 859-501	72,50	GNS 440 A	944 655-001	135,—
FESA 815 N 37	910 862-501	95,50	GNS 445 A	944 656-001	179,—
FESA 815 N 48	910 863-501	95,50	GNS 450 A	944 657-001	506,—
FESA 815 N 60	910 864-501	95,50	GNT 42/2500	950 695-000	207,—
FESA 815 N 69	910 865-501	95,50	GNV 121 A	944 674-001	73,—
FESA 817 N 37	910 866-501	138,—	GNV 141 A	944 675-001	85,—
FESA 817 N 48	910 867-501	138,—	GNV 151 A	944 676-001	342,—
FESA 817 N 60	910 868-501	138,—	GT 8 V	910 366-000	—,85
FESA 817 N 69	910 869-501	138,—	GW 1375	947 385-001	8,20
FESA 818 N 60	910 874-501	163,—	GW 75	947 137-001	9,60
FESA 1234 MB	910 761-503	199,—	HCB - 450 A	947 314-001	43,—
FESA 2129 A	971 160-502	66,50	HFB 224		675,—
FETRA 2	911 085-000	24,—	HIT AWN 60 B 3/4	945 036-000	14,60
FIDO 2340	947 454-001	52,—	HIT AWN 264/60 B 3/4	945 051-000	22,—
FLD 50	601 136-000	92,—	HIT DAB 42-3 N	601 130-000	15,70
FM 10 KR	910 903-501	60,—	HIT DAB 52-3 N	601 131-001	25,30
FM 30	910 906-002	31,50	HIT FESA 4 BV	910 890-501	26,50
FM 50	910 907-002	40,50	HIT FESA 13 BV	910 893-501	60,50
FP-LNE 1501	878 823-001	62,50	HIT FESA 14 BV	910 904-501	73,50
FP-LVU 001	878 827-001	40,80	HIT FESA 243	910 840-003	50,—
FP-LZA 001	878 825-001	34,70	HIT FESA 805 A	910 486-001	40,50
FP-LZE 001	878 826-001	36,20	HIT ZIFA 8351	910 913-502	18,40
FW 1	947 276-002	30,60	HIT ZIFA 8356 V	910 912-502	52,50
FW 2	947 442-001	43,—	HIT ZIFA 8357 EV	910 975-502	60,—
FVS 030 A	961 010-001	119,—	HZ 32		6.816,—
FVS 030 D	961 011-001	133,—	H 75 AB	932 824-001	see/siehe P 410-HF
GEDU 2400 C	947 418-001	13,40	H 75 GA	932 569-001	see/siehe P 410-HF
GEDU 2405 C	947 421-001	13,50	H 75 KES-I	932 564-001	see/siehe P 410-HF
GEDU 2408 C	947 420-002	14,60	H 75 KES-N	932 565-001	see/siehe P 410-HF
GEDU 2411 C	947 422-001	10,50	H 75 KES-Q	932 566-001	see/siehe P 410-HF
GEDU 2416 C	947 450-001	17,—	H 75 KES-S	932 929-001	see/siehe P 410-HF
GEDU 2420 C	947 419-001	14,40	H 75 KH	932 563-001	see/siehe P 410-HF
GEDU 2914 CL	947 425-001	15,20	H 75 KS 3,5/12	932 568-001	see/siehe P 410-HF
GEDU 2914 CR	947 426-001	15,20	H 750 AW-N	932 011-002	see/siehe P 410-HF
GEMA 1-31	811 782-002	58,50	IK 120	910 272-000	1,40
GEMA 1 KR	910 800-501	145,—	KA 3/100	197 709-100	—,85
GEMA 3 KR	910 801-501	166,—	KA 4 S	913 558-001	113,—
GEMA 4 KR	910 802-501	153,—	KAF 1306	947 382-001	7,60
GEMA 5 KR	910 803-501	198,—	KAF 1308	947 383-001	10,60
GEMA 11	910 777-501	267,—	KAF 1309	947 402-001	10,60
GEMA 31	910 778-501	295,—	KAF 1312	947 384-001	10,60
GEMA 41	910 779-501	283,—	KAMA 42	910 264-000	3,—
GHV 111 A	944 663-001	66,—	KARI 72	910 290-000	8,70
GHV 111 B	944 664-001	66,50	KASPI 12	910 270-000	1,75
GHV 120 A	944 665-001	84,—	KASPI 120	910 274-000	2,25
GHV 120 B	944 666-001	85,—	KE 300-06-1	877 440-006	60,—
GHV 120 F	944 667-001	112,—	KE 300-12-1	877 440-012	60,—
GHV 121 B	944 677-001	110,—	KE 300-15-1	877 440-015	60,—
GHV 141 A	944 668-001	105,—	KE 300-21-1	877 440-021	60,—
GHV 141 B	944 669-001	105,—	KE 300-27-1	877 440-027	60,—
GHV 142 B	944 670-001	108,—	KE 300-30-1	877 440-030	60,—
GHV 156 A	944 659-001	315,—	KE 450-00	879 701-000	18,—
GHV 156 B	944 660-001	315,—	KE 450-00-1	976 452-001	63,—

1) Bei Bestellung bitte den gewünschten Kanal angeben

2) Bei Bestellung bitte die gewünschte Kanal-Umsetzung angeben

1) Please specify channel when ordering

2) Please specify channel conversion when ordering

Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each	Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
KE 450-03-1	976 468-003	63,—	KWS 011	947 278-101	46,—
KE 450-06-1	976 468-006	63,—	KWS 0311	947 275-101	36,10
KE 450-09-1	976 468-009	63,—	KWS 0312	947 275-102	36,10
KE 450-12-1	976 468-012	63,—	KWS 0313	947 275-103	36,10
KE 450-15-1	976 468-015	63,—	KWS 0314	947 275-104	36,10
KE 450-18-1	976 468-018	63,—	KWS 0315	947 275-105	36,10
KE 450-21-1	976 468-021	63,—	KWS 0316	947 275-106	36,10
KE 450-24-1	976 468-024	63,—	KWS 0409 K 21-42+45-69	947 277-109	43,—
KE 450-27-1	976 468-027	63,—	KWS 0410 K 21-46+49-69	947 277-110	43,—
KE 450-30-1	976 468-030	63,—	KWS 0412 K 21-55+58-69	947 277-112	43,—
KE 550-00	879 701-000	18,—	KWS 0511	947 264-101	54,—
KE 550-03-1	976 468-503	63,—	KWS 0512	947 264-102	54,—
KE 550-06-1	976 468-506	63,—	KWS 0513	947 264-103	54,—
KE 550-09-1	976 468-509	63,—	KWS 0514	947 264-104	54,—
KE 550-12-1	976 468-512	63,—	KWS 0911 F	947 408-001	43,—
KE 550-15-1	976 468-515	63,—	KWS 0912 F	947 409-001	44,50
KE 550-18-1	976 468-518	63,—	KWS 0922 F	947 464-001	46,50
KE 550-21-1	976 468-521	63,—	KWS 0923 F	947 465-001	46,50
KE 550-24-1	976 468-524	63,—	LE 5061		1.132,—
KE 550-27-1	976 468-527	63,—	LES 1512	947 416-001	112,—
KE 550-30-1	976 468-530	63,—	LES 1706	947 379-001	38,80
KFC 402	947 436-001	37,20	LES 4503	947 324-101	37,80
KFC 404	947 437-001	45,40	LES 4506	947 324-102	37,80
KFC 425	947 439-001	49,—	LES 4509	947 324-103	37,80
KFX 912 A	947 317-001	—,70	LES 4703 M	947 341-003	24,50
KOBU 75 M 14/PG 11	932 065-001	see/siehe P410-HF	LES 4706 M	947 341-006	24,50
KOKA 702	198 702-...	—,85	LES 4709 M	947 341-009	24,50
KOKA 711	198 711-...	1,05	LES 4712 M	947 341-012	24,50
KOKA 712	198 712-...	1,65	LES 4715 M	947 341-015	24,50
KOKA 713	198 713-...	1,20	LES 4718 M	947 341-018	24,50
KOKA 715	198 715-...	1,90	LES 4721 M	947 341-021	24,50
KOKA 741	198 741-...	2,85	LES 4724 M	947 341-024	24,50
KOKA 742	198 742-500	5,80	LES 6303 M	947 342-003	24,—
KOKA 743	198 743-500	8,90	LES 6306 M	947 342-006	24,—
KOKA 744	198 744-000	5,20	LES 8603 G	947 343-003	35,—
KOKA 751	198 751-000	5,40	LES 8603 M	947 340-003	24,50
KOKA 753	198 753-500	12,30	LES 8606 G	947 343-006	35,—
KOKA 792	198 792-...	—,95	LES 8606 M	947 340-006	24,50
KOKA 794	198 794-100	2,60	LES 8609 G	947 343-009	35,—
KOSWI 75 B	932 852-001	see/siehe P410-HP	LES 8609 M	947 340-009	24,50
KOSWI 100	931 436-001	see/siehe P410-HP	LES 8612 G	947 343-012	35,—
KPW 0413 D ¹⁾	947 458-...	160,—	LES 8612 M	947 340-012	24,50
KUF 7500	949 389-001	146,—	LGP 3	944 011-000	31,50
KUF 7550	960 490-001	131,—	LM 18 RF	961 324-001	158,—
KUG 7061	947 089-002	66,50	LM 22 RF	961 374-001	410,—
KVB 11-S	947 404-001	93,—	LM 23 RF	960 539-001	830,—
KVB 11-Q	947 404-002	74,50	LMO 116 A	961 039-101	602,—
KVB 11-N	947 404-003	46,50	LMO 116 B	961 039-102	643,—
KVB 11-I	947 404-004	42,—	LMO 126 A	961 058-001	541,—
KVB 11-12	947 404-005	38,60	LMO 126 B	961 058-002	581,—
KVB 61	910 108-001	2,80	LMO 136 A	961 059-001	602,—
KVFC 01	947 374-001	1,70	LMO 136 B	961 059-002	643,—
KVFC 02	947 387-001	2,80	LMO 146 A	961 060-001	460,—
KVFC 03 M	947 394-001	1,50	LMO 146 B	961 060-002	500,—
KVLA 13-004	931 923-004	see/siehe P410-HP	LMO 156 A	961 067-001	551,—
KVLA 27-004	931 924-004	see/siehe P410-HP	LMO 216 A	961 054-001	1.928,—
KVLA 34-004	931 925-004	see/siehe P410-HP	LMU 9202 M	961 046-002	1.693,—
KVLA 45-004	931 926-004	see/siehe P410-HP	LNE 701	944 023-000	245,—
KVLA 100-004	931 927-004	see/siehe P410-HP	LNE 1501	944 018-001	314,—
KVLA 140-004	931 928-004	see/siehe P410-HP	LPI 5701 ¹⁾	961 069-...	765,—
KVS 1	947 194-001	3,50	LSAKE-O-HR	936 780-001	121,—
KVS 741	947 223-002	18,—	LSW 6045	976 131-001	999,—

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Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each	Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
LUB 101 A	948 358-001	435,—	LW 77	944 681-001	4,50
LUK 060 AKU 1	961 048-001	435,—	LZA 261 K.. ¹⁾	948 282-...	476,—
LUK 060 AKU 2	961 048-002	435,—	LZA 263 K.. ¹⁾	948 281-...	476,—
LV 2217 F	976 593-217	1.028,—	LZA 264 K.. ¹⁾	948 292-...	784,—
LV 2217 N	976 593-017	832,—	LZA 267 KS.. ¹⁾	948 283-...	480,—
LV 2221 F	976 593-221	1.083,—	LZA 268 KS.. ¹⁾	948 284-...	486,—
LV 2221 N	976 593-021	887,—	LZA 269 KS.. ¹⁾	948 321-...	867,—
LV 2227 F	976 593-227	1.083,—	LZE 416 K.. ¹⁾	948 280-...	572,—
LV 2227 N	976 593-027	908,—	LZE 436 K.. ¹⁾	948 279-...	606,—
LV 2233 F	976 593-233	1.100,—	LZE 446 K.. ¹⁾	948 278-...	755,—
LV 2233 N	976 593-033	904,—	LZE 446 LK.. ¹⁾	948 365-...	921,—
LV 2238 F	976 593-238	1.219,—	LZE 476 KS.. ¹⁾	948 290-...	597,—
LV 2238 N	976 593-038	1.019,—	LZE 486 KS.. ¹⁾	948 291-...	600,—
LV 5517 F	976 593-617	1.132,—	MAKA 10	912 748-000	3,30
LV 5517 N	976 593-417	933,—	MAKA 15	910 231-000	2,90
LV 5521 F	976 593-621	1.129,—	MAR 50/100	913 641-001	17,10
LV 5521 N	976 593-421	984,—	MAR 60/200	913 642-001	38,50
LV 5527 F	976 593-627	1.142,—	MAR 89/250	913 685-001	114,—
LV 5527 N	976 593-427	1.017,—	MF 63	910 781-001	9,40
LV 5533 F	976 593-633	1.300,—	MG 1	847 753-001	10,40
LV 5533 N	976 593-433	952,—	MG 32		1.008,—
LV 5538 F	976 593-638	1.314,—	MG 890	913 686-001	49,50
LV 5538 N	976 593-438	1.153,—	MH 50	601 140-000	46,50
LVB 490	942 125-000	365,—	MHR 950	913 576-001	52,—
LVB 2202	942 213-001	406,—	MKR 211 K.. ¹⁾	944 576-...	184,—
LVB 3202	942 333-001	592,—	MKR 233 K.. ¹⁾	944 570-...	168,—
LVB 4830	942 241-001	332,—	MKR 245 K.. ¹⁾	944 569-...	274,—
LVB 7830	942 240-001	353,—	MSG 5585	913 768-001	115,—
LVH 2217 F	976 593-317	1.132,—	MT-L..-001	878 816-001	125,—
LVH 2217 N	976 593-117	831,—	MT-LNE 1501	878 813-001	128,—
LVH 2233 F	976 593-333	1.100,—	MTS 200 B	961 038-001	122,—
LVH 2233 N	976 593-133	1.108,—	MTS 400 B	961 037-001	255,—
LVH 2238 F	976 593-338	1.304,—	MTS Connection	961 042-001	17,—
LVH 2238 N	976 593-138	1.122,—	MUF 1	947 135-000	18,—
LVH 5517 F	976 593-717	1.210,—	MUF 2	947 136-000	19,60
LVH 5517 N	976 593-517	1.048,—	MUF 3	947 149-001	39,80
LVH 5521 AF	976 593-921	2.091,—	MUF 10	947 176-001	13,80
LVH 5521 AN	976 593-821	1.905,—	MUFFE	936 452-001	455,—
LVH 5521 F	976 593-721	1.210,—	MVR 131 K.. ¹⁾	944 423-...	144,—
LVH 5521 N	976 593-521	1.048,—	MVR 132 K 5 + 7	944 472-002	134,—
LVH 5527 AF	976 593-927	2.122,—	MVR 240 BS	944 557-002	128,—
LVH 5527 AN	976 593-827	1.932,—	MVR 241 K.. ¹⁾	944 560-...	166,—
LVH 5529 AN	976 593-829	2.440,—	MVR 242 K.. + K.. ²⁾	944 598-...	179,—
LVH 5533 AF	976 593-933	2.192,—	MVR 1434 ²⁾	944 682-...	244,—
LVH 5533 AN	976 593-833	2.008,—	MWFC 01	947 396-001	28,—
LVH 5533 F	976 593-733	1.377,—	MZ 50	910 851-001	43,70
LVH 5533 N	976 593-533	1.181,—	MZ 60	910 852-001	45,40
LVH 5538 F	976 593-738	1.390,—	MZ 89	913 689-001	101,—
LVH 5538 N	976 593-538	1.228,—	OAEB 24	936 451-001	see/siehe P 720
LVK 231 S K.. ¹⁾	942 183-...	469,—	OAVB 24	936 450-001	see/siehe P 720
LVK 235 S K.. ¹⁾	942 232-...	281,—	OBPE 1000 A	960 615-001	53,—
LVK 311 S K.. ¹⁾	942 181-...	411,—	OCPG 1306 A	960 616-001	10.265,—
LVK 331 S K.. ¹⁾	942 184-...	321,—	OKELP 10/125-J-VY-HR	936 680-001	see/siehe P 720
LVK 341 S K.. ¹⁾	942 187-...	328,—	OLTE 5500 A	960 611-001	44.290,—
LVK 431 S K.. ¹⁾	942 185-...	441,—	OLTE 5500 B	960 611-002	48.445,—
LVK 431 K S.. ¹⁾	949 429-...	396,—	OLTE 8600 A	960 628-001	48.720,—
LVK 445 S K.. ¹⁾	942 191-...	450,—	OLTE 8600 B	960 628-002	51.835,—
LVK 545 S K.. ¹⁾	942 177-...	553,—	OLTG 5500 A	960 617-001	44.585,—
LVKR 311 S K.. ¹⁾	942 182-...	624,—	OLTG 5500 B	960 617-002	56.368,—
LVKR 431 S K.. ¹⁾	942 186-...	658,—	OMRE 1013 A	960 626-001	938,—
LVKR 545 S K.. ¹⁾	942 178-...	705,—	OMRG 1013 A	960 627-001	938,—
LW 76	944 377-000	3,80	OMTE 1013 A	960 612-001	1.424,—

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Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each	Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
OMTG 1013 A	960 618-001	1.424,—	SFC 230	947 393-001	1,10
OORE 5500 A	960 613-001	7.875,—	SFC 250	947 392-001	1,10
OORE 8600 A	960 629-001	8.425,—	SFC 273	947 391-001	3,—
OORG 5500 A	960 619-001	8.815,—	SFC 402	947 432-001	38,80
ORPE 1230 A	960 610-001	3.815,—	SFC 404	947 433-001	47,—
ORSG 5502 A	960 649-001	6.100,—	SFC 425	947 435-001	51,—
ORSG 5504 A	960 647-001	8.050,—	SFN 061 A	961 391-001	535,—
ORSG 8602 A	960 650-001	6.585,—	SFN 061 M	961 391-002	785,—
ORSG 8604 A	960 648-001	8.690,—	SFN 061 S	961 391-003	785,—
PG 13,5 - PG 11	947 405-001	—,85	SFN 063 A K.. ¹⁾	961 390-1..	720,—
PRM 8420		672,—	SFN 063 M K.. ¹⁾	961 390-2..	830,—
R 75	910 760-000	1,—	SFN 063 S K.. ¹⁾	961 390-3..	830,—
RAC 63	947 000-000	—,50	SFN 064 A K.. ¹⁾	961 389-1..	420,—
REM 25-05	889 967-001	79,—	SFN 064 M K.. ¹⁾	961 389-2..	540,—
RFC 75	947 373-001	1,30	SFN 064 S K.. ¹⁾	961 389-3..	540,—
RKE 25-00	889 962-001	30,60	SHV 111	944 529-101	63,—
RVM 25-13	889 954-001	257,—	SHV 111 FC	944 607-001	62,—
SA 1	944 473-002	18,90	SHV 120	944 530-102	74,—
SB 1	944 487-001	6,80	SHV 120 FC	944 608-002	73,—
SB 02		30,—	SHV 140	944 531-102	134,—
SBE 440	962 261-001	394,—	SHV 140 FC	944 609-002	133,—
SBE 440-8	962 261-002	424,—	SHV 156	944 579-002	525,—
SBE 440-127 V	962 261-004	406,—	SHV 156 FC	944 630-001	524,—
SBE 450	962 262-001	523,—	SLN 3207	944 629-001	530,—
SBE 450-8	962 262-002	551,—	SLV 1200 FG	944 619-001	656,—
SBE 450-127 V	962 262-004	532,—	SLV 1200 N	944 605-001	690,—
SBE 471	962 264-001	564,—	SLV 1208 FG	944 611-001	656,—
SBE 471-8	962 264-002	590,—	SLN 1208 N	944 606-001	690,—
SB-HIT FESA 6 BV	910 896-501	34,70	SLV 1208 SG	944 610-001	690,—
SB-HIT FESA 7 BO 60	910 977-501	28,80	SLV 1308 FG	944 645-001	835,—
SB-HIT FESA 10 BV	910 897-501	54,60	SLV 1308 N	944 643-001	876,—
SB-HIT FESA 12 BO 60	910 978-501	39,90	SLV 1308 SG	944 644-001	876,—
SB-HIT FESA 16 BO 60	910 979-501	47,80	SLV 1408 FG	944 615-001	656,—
SB-HIT FESA 805 Alu	910 486-502	45,50	SLV 1408 N	944 603-001	690,—
SBFC 01	947 395-001	2,55	SLV 1408 SG	944 614-001	690,—
SBFC 02	947 415-001	2,55	SLV 1440 FG	944 623-001	833,—
SBU 2013 K.. K.. ²⁾	962 429-...	414,—	SLV 1440 N	944 604-001	875,—
SBU 2031 K.. K.. ²⁾	962 428-...	414,—	SNA 1	944 470-002	59,—
SBU 2033 K.. K.. ²⁾	962 427-...	414,—	SNG 24/350	962 208-001	210,—
SBU 2041 K.. K.. ²⁾	962 403-...	440,—	SNG 2480	944 593-001	60,—
SBU 2043 K../K.. ²⁾	962 404-...	445,—	SNN 250	944 399-001	55,—
SBV 112 Bb	944 461-502	67,—	SPERR 7 CB	947 222-002	27,50
SBV 119	944 540-502	68,—	SPERR 24	947 273-002	41,30
SBV 122	944 539-502	100,—	SPERR 29	947 272-002	83,—
SBV 132 Bb	944 462-502	67,—	SPERR 91	947 288-002	31,40
SBV 142 Bb	944 460-502	114,—	SPERR 92	947 289-002	31,40
SCHIMA 48/400	910 821-001	104,—	SPERR 701 K. ohne Abgleich	947 284-101	96,—
SCHIMA 48/500	910 820-001	118,—	SPERR 701 K.. ¹⁾	947 284-...	102,—
SCHIMA 48/600	910 819-001	144,—	SPERR 703 K.. ohne Abgleich	947 285-201	91,—
SCHIMA 60/601	910 818-001	186,—	SPERR 703 K.. ¹⁾	947 285-...	92,—
SCHIMA 100	912 814-000	445,—	SPERR 704 K.. ohne Abgleich	947 286-101	94,—
SE-LV 450-01	889 938-001	67,90	SPERR 704 K.. ¹⁾	947 286-...	96,—
SE-LV 450-05	889 939-001	98,—	SPERR 705 K.. ohne Abgleich	947 287-101	94,—
SE-LV 450-06	889 937-001	60,70	SPERR 705 K.. ¹⁾	947 287-...	96,—
SE-LV 550-00	889 940-001	16,—	SPERR 745	947 178-002	47,50
SE-LV 550-01	889 929-001	67,90	SPERR 753 K.. ¹⁾	947 339-...	55,—
SE-LV 550-05	889 929-002	98,—	SSY 4	947 430-001	94,—
SE-LV 550-06	889 934-001	60,70	SSY 6	947 431-001	120,—
SFC 040	947 390-001	1,10	SSY 1775	811 017-001	10,70
SFC 052	947 389-001	1,10	SSY 3330	810 950-002	23,50
SFC 061	947 371-001	1,45	SSY 4330	811 016-002	37,70
SFC 070	947 388-001	1,10	ST 10	947 455-001	140,—

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Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each	Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
STEMA 50 a/150	810 734-000	57,50	VEDO 0749	947 378-001	50,—
STEMA 50 a/200	810 736-002	65,—	VEDO 0936	947 184-002	32,50
STEMA 50 a/250	810 735-000	96,—	VF 4	910 885-001	22,—
STEMA 51/200	810 853-000	46,—	VF 6	910 841-001	26,70
STEMA 51/300	810 854-000	66,—	VF 9	910 842-001	35,20
STEMA 420/150	811 077-001	22,20	VF 13	910 843-001	47,50
STEMA 420/200	811 077-002	28,50	VFC 0421	947 355-001	8,75
STEMA 420/300	811 077-003	42,70	VFC 0631	947 356-001	13,20
SVG 2000	976 516-001	1.156,—	VFC 0741	947 357-001	15,30
SVM 2221 AO	976 512-031	1.890,—	VFO/DF	936 156-001	106,—
SVM 2221 AU	976 512-021	1.890,—	VFO/DF 9/125	936 155-001	462,—
SVM 2221 M	976 512-011	1.760,—	VG 0425	947 353-001	83,—
SVM 2226 AO	976 512-003	1.890,—	VG 0745	947 354-001	195,—
SVM 2226 AU	976 512-002	1.890,—	VLM 450-00	889 963-001	21,—
SVM 2226 M	976 512-001	1.760,—	VM 450-03	889 970-001	33,50
SVS 25/60	976 515-001	815,—	VM 550-03	889 970-001	33,50
SVS 220	976 514-001	514,—	VMS 0631	947 271-003	103,—
SWF 6060	976 648-001	857,—	VMS 0633 N	947 292-002	190,—
SYM 70	910 456-000	12,90	VR 061	947 321-002	125,—
SYMA 265	947 035-000	15,50	VR 081	947 319-002	152,—
SZ 256	810 902-000	4,60	VR 121	947 320-002	199,—
SZ 350	910 462-001	1,80	VRF 0420	976 615-002	215,—
SZ 951	910 948-001	1,80	VRF 0740	976 615-001	285,—
SZ 952	910 946-001	1,80	VRT 042 C	961 319-002	104,—
TNA 252 A ²⁾	961 002-...	1.152,—	VRT 042 CM	961 320-002	112,—
TNA 262 A ²⁾	961 001-...	835,—	VRT 063 C	961 018-002	129,—
TNA 262 B ²⁾	961 028-...	890,—	VRT 074 C	961 019-002	137,—
TNA 262 G ²⁾	961 023-...	870,—	VRZ 092 D	962 764-002	26,50
TNA 952 A ²⁾	961 003-...	1.198,—	VS 41237		1.367,—
TNA 952 B	961 004-001	1.210,—	VS 4538		1.607,—
TP 20		76,50	VSV 042	947 295-002	38,30
TRAG 31	910 398-000	14,80	VZV 420	962 709-002	12,80
TRAG 36	910 854-001	104,—	WAK 247	945 135-002	36,10
TRAG 53	912 027-000	31,50	WAK 301	945 004-000	29,—
TRAG 56	910 855-001	77,50	WAK 333	945 082-004	37,20
TVM 7101 K... ¹⁾	949 574-...	3.350,—	WAK 3481	945 130-000	83,—
TVM 7103 K... ¹⁾	949 575-...	3.350,—	WAK 4310	945 114-001	48,—
TVM 7104 K... ¹⁾	949 576-...	3.605,—	WAK 4312	945 114-003	48,—
TVM 7106	949 577-001	2.855,—	WAK 4314	945 114-005	48,—
TVM 7211 K...+K... ²⁾	949 578-001	4.995,—	WAK 4571	974 114-001	76,—
TVM 7213 K...+K... ²⁾	949 579-001	4.995,—	WFC 01	947 372-001	3,—
TVM 7214 K...+K... ²⁾	949 580-001	5.300,—	ZGV 76	910 805-002	14,20
TVM 7233 K...+K... ²⁾	949 581-001	4.995,—	ZIFA 72	910 741-501	30,10
TVM 7234 K...+K... ²⁾	949 582-001	5.300,—	ZIFA 791 LP	910 886-501	69,—
TVM 7244 K...+K... ²⁾	949 583-001	5.610,—	ZIFA 796 LP-V	910 887-501	126,—
TVM 7266	949 584-001	3.750,—	ZIFA 7081 V	910 798-002	35,—
U 1	912 511-501	33,—	ZU 721	910 757-501	27,60
U 3	912 515-502	57,—	ZU 726 V	910 756-501	59,—
U 4	910 664-501	67,—	ZVA 134	944 440-002	48,60
U 5	910 234-502	88,—			
U 8	910 738-502	146,—			
UF 8	910 725-001	17,30			
UF 14	910 726-001	24,80			
VAE 7042		38,80			
VDR 751	963 303-002	18,40			
VEDO 0422 A	947 469-001	36,20			
VEDO 0423	947 180-002	28,—			
VEDO 0429	947 327-001	31,30			
VEDO 0632 A	947 470-001	55,50			
VEDO 0636	947 262-002	41,50			
VEDO 0744 A	947 471-001	68,—			
VEDO 0746	947 183-002	54,—			

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Allgemeine Lieferbedingungen

1. Vertragsabschluß

1.1 Für alle unsere Lieferungen gelten die Lieferbedingungen. Der Besteller anerkennt dies durch Erteilung seiner ersten Bestellung. Abweichende Bedingungen werden auch dann nicht Vertragsbestandteil, wenn wir ihnen weder widersprechen noch vorbehaltlos liefern bzw. die Zahlung annehmen.

1.2 Unsere Angebote erfolgen freibleibend.

1.3 Sowohl über Vertreter als auch direkt erteilte Aufträge sind erst nach Absendung unserer schriftlichen Bestätigung oder Bereitstellung der Ware zur Übergabe verbindlich. Unser Schweigen gilt im Zweifel als Ablehnung.

2. Lieferpflichten

2.1 Unsere Vertragspflichten ergeben sich ausschließlich aus unserer Auftragsbestätigung.

2.2 Die Waren werden in üblicher Beschaffenheit geliefert. Bei Massenartikeln gilt ein Ausschluß bis zu 10% als handelsüblich.

2.3 Kleinere Abweichungen, Konstruktionsänderungen sowie Mehr- oder Minderlieferungen bis zu 10% bleiben vorbehalten.

2.4 Die Mindestabnahmemenge entspricht dem Inhalt unserer jeweiligen Original-Verkaufsverpackungen.

2.5 Angegebene Lieferfristen sind unverbindlich. Insbesondere höhere Gewalt, Streik, Aussperung, Rohstoff- und Energiemangel, Unfälle, Transport-, Fabrikations- und Betriebsstörungen – gleichgültig, ob im eigenen Betrieb oder bei Zulieferanten – berechtigen uns, Lieferfristen entsprechend zu verlängern oder die Leistungen ersatzlos zu verweigern.

2.6 Werden uns nach Vertragsabschluß Tatsachen bekannt, die die Zahlungsfähigkeit des Bestellers beeinträchtigen können, so dürfen wir entweder sofortige Vorauszahlung verlangen oder vom Vertrag ersatzlos zurücktreten.

2.7 Alle Lieferungen erfolgen ab Werk. Die Versandkosten frei Bestimmungs-Station einschl. Verpackung tragen wir nur bei Netto-Auftragswerten über 750,- DM. Eine Transport-Versicherung schließen wir auf ausdrücklichen Wunsch für den Besteller ab, wenn er die Kosten übernimmt.

3. Gewährleistung

3.1 Wir übernehmen für die von uns gelieferte Ware eine Gewährleistung von 6 Monaten, für unsere Autoantennen und Einbruch-Meldesysteme gilt eine Frist von 12 Monaten. Diese Frist beginnt mit dem Tage der Auslieferung an den Besteller bzw. bei Wiederverkäufern mit dem Tage der Veräußerung an den Endabnehmer.

3.2 Berechtigte Beanstandungen werden nach unserer Wahl entweder durch Nachbesserung oder Neulieferung erledigt. Weitergehende Ansprüche (auch aus zugesicherten Eigenschaften) sind ausgeschlossen.

3.3 Die Geltendmachung von Gewährleistungsansprüchen setzt die Vorlage entsprechender Beweismittel voraus. Mängelrügen müssen innerhalb von 8 Tagen schriftlich erhoben werden.

3.4 Bei unberechtigten Rügen berechnen wir die uns entstandenen Kosten einschl. Rückfracht.

4. Sonstige Schadenersatzansprüche

Anderweitige Schadenersatzansprüche des Bestellers gegen den Auftragnehmer, seine Erfüllungs- und Verrichtungsgehilfen, gleich aus welchem Rechtsgrund, sind ausgeschlossen. Dies gilt insbesondere für Folgeschäden.

5. Eigentumsvorbehalt

5.1 Alle Lieferungen erfolgen unter Eigentumsvorbehalt, der bis zur Begleichung aller Forderungen von Unternehmen der HIRSCHMANN-Gruppe bestehen bleibt.

5.2 Vor dem Erlöschen des Eigentumsvorbehaltes darf die Ware nur weiterveräußert werden, wenn der Kunde entweder unseren Eigentumsvorbehalt offenlegt und dieser aufrechterhalten wird oder hiermit alle Forderungen gegen Abnehmer unseres Kunden an uns abgetreten werden, und zwar bis zu einem Betrage von 120% der jeweiligen Gesamtforderung. Solange unser Kunde seinen Zahlungsverpflichtungen voll nachkommt, ist er zur Einziehung der abgetretenen Forderungen berechtigt. Bei Vermischung und Verarbeitung der Ware tritt der Käufer hiermit seine Eigentums- oder Miteigentumsrechte an uns ab.

5.3 Zugriffe Dritter auf unsere Rechte zeigt uns der Käufer unverzüglich an. In jedem Falle weist er den Dritten sofort auf unsere Rechte ausdrücklich hin.

6. Preise und Zahlungsbedingungen

6.1 Unsere Preise verstehen sich, sofern nichts anderes vereinbart wird, ab Werk, in DM, ohne Verpackungs- und Versandkosten. Zu den Preisen kommt die gesetzliche Mehrwertsteuer in der jeweils gültigen Höhe hinzu.

6.2 Wir berechnen die bei Vertragsabschluß vereinbarten bzw. gültigen Preise, die auf den zu dieser Zeit maßgebenden Kostenfaktoren basieren. Sollten sich zwischen Vertragsabschluß und vereinbarter Lieferungs-/Leistungszeit diese Kostenfaktoren (insbesondere Material, Löhne, Energie, Abgaben, Fracht, DM-Wechselkurse usw.) ändern, so sind wir berechtigt, eine entsprechende Preisänderung vorzunehmen. Tritt der Besteller nicht als Kaufmann auf, bzw. gehört der Vertrag nicht zum Betrieb seines Handelsgewerbes, gilt dies nur, wenn zwischen Vertragsabschluß und Liefer- bzw. Leistungszeit mehr als 4 Monate liegen.

6.3 Unsere Rechnungen sind innerhalb 30 Tagen nach Rechnungsausgangsdatum ohne jeden Abzug fällig.

6.4 Treten nach Auslieferung der Ware Umstände ein, die befürchten lassen, der Besteller werde seiner Zahlungsverpflichtung nicht nachkommen, so tritt die Fälligkeit sofort ein. Dies gilt insbesondere, wenn der Besteller andere fällige Forderungen nicht begleicht. Weitere Lieferungen erfolgen nur gegen Vorauszahlung.

6.5 Zahlungen werden stets auf die älteste Schuld geleistet.

6.6 Wechsel und Schecks gelten erst mit Einlösung als Zahlung. Wechselzahlungen müssen vorher schriftlich vereinbart werden. Diskont- und sonstige Wechselkosten gehen zu Lasten des Bestellers und sind sofort ohne jeden Abzug fällig. Für die rechtzeitige Vorlegung und Weiterberechnung von Wechselprotesten haften wir nicht.

6.7 Die Aufrechnung mit von uns bestrittenen und/oder nicht rechts

kräftig festgestellten Gegenansprüchen des Bestellers ist nicht statthaft. Ein Zurückbehaltungsrecht kann der Besteller nur aufgrund von Gegenansprüchen aus demselben Vertrag geltend machen.

6.8 Bei verspäteter Zahlung oder Stundung werden Zinsen mit 4% p.a. über dem Diskontsatz der Deutschen Bundesbank berechnet, zuzüglich Mehrwertsteuer.

6.9 Leistet der Besteller bei Fälligkeit keine Zahlungen, so können wir die Weiterarbeit an laufenden Aufträgen einstellen und sofortige Vorauszahlung für alle, auch für die noch nicht erledigten Aufträge oder entsprechende Sicherheitsleistung, verlangen. Kommt der Besteller unserem Verlangen auf Vorauszahlung oder Sicherheitsleistung innerhalb angemessener Frist nicht nach, sind wir berechtigt, vom Vertrag (bzw. von den Verträgen) zurückzutreten und dem Besteller die bis dahin entstandenen Kosten einschließlich entgangenem Gewinn in Rechnung zu stellen.

6.10 An Vertreter und Beauftragte kann mit befreiender Wirkung nur bezahlt werden, wenn diese schriftliche Inkasso-Vollmacht nachweisen.

6.11 Gutschriften für zurückgenommene Ware erfolgen unter Abzug einer angemessenen Gebühr zur verkaufsfähigen Wiederherstellung der Ware. Nach Kundenauftrag gefertigte Waren bleiben von Rücknahme und Gutschrift ausgeschlossen, ausgenommen bei von uns anerkannten Mängelrügen.

7. Gerichtsstand u.a.

7.1 Es gilt ausschließlich das Recht der Bundesrepublik Deutschland. Erfüllungsort ist Esslingen/Neckar; dasselbe gilt für den Gerichtsstand auch dann, wenn der Kunde nicht Vollkaufmann ist und wir unsere Rechte im Mahnverfahren geltend machen.

7.2 Sollte eine der vorstehenden Klauseln unwirksam sein, so dürfen wir sie durch eine anderslautende Bestimmung ersetzen, die dem Sinn und Zweck möglichst nahe kommt.

Richard Hirschmann GmbH & Co
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Ergänzungspreisliste für P 25
"Stationäre Empfangstechnik"
 gültig ab 01.August 1992

Supplement to pricelist P 25
"Stationary-Reception-Technology"
 valid as per 1.August 1992

Typ/Type	Best-Nr./Order code	Stückpreis DM/Price DM each
CDN 3800 A	960 656-001	50,00 **
CKM 3910 A	960 641-001	530,00 **
CKM 3930 A	960 640-001	530,00 **
CKM 3931 A	960 642-001	530,00 **
CKM 3940 A	960 694-001	530,00
CKR 3400 F	947 500-001	126,00
CKU 3030 A	960 695-001	530,00
CSS 3000 A	960 639-001	1.095,00 **
CUM 3016 A	960 643-001	530,00
CVU 3200 A	960 696-001	530,00
EDA 3902 F	947 499-001	18,50
H 75 AB	932 824-001	5,80
H 75 GA	932 569-001	18,50
H 75 KBL	931 930-002	4,30
H 75 KES 1	932 564-001	5,50
H 75 KES N	932 565-001	5,30
H 75 KES Q	932 566-001	4,90
H 75 KES S	932 655-001	26,60
H 75 KH	932 563-001	5,00
H 75 KS 3,5/12	932 568-001	16,70
H 75 KZS-BP	931 931-004	13,50
H 750 AW-N	932 011-002	4,30
KOBU 1 H	931 604-200	0,85
KOBU 75	931 910-002	4,40
KOBU 75 M 14/PG 11	932 065-001	10,70
KOK 1 Z	932 489-307	1,50
KOK 3	932 059-307	1,15
KOK 3 N	932 866-307	1,25
KOK 9 N	932 658-317	1,75
KOKWI 3	933 008-307	1,70
KOKWI 75	932 550-001	6,00
KOS 1 Z	932 488-307	1,15
KOS 3	932 058-307	1,10
KOS 3 N	932 867-307	1,25
KOS 9 N	932 659-317	1,60
KOSWI 75/M 14	932 122-001	5,70
KOSWI 3	933 007-307	1,55
KOSWI 75 B	932 852-001	3,50
KVLA 13-004	931 923-004	11,50
KVLA 27-004	931 924-004	12,20
KVLA 34-004	931 925-004	12,50
KVLA 45-004	931 926-004	13,10
KVLA 60/M 14	932 123-001	19,00
KVLA 100-004	931 927-004	15,50
KVLA 140-004	931 928-004	17,30
LES 2006	947 489-001	41,40
XZC 0075	931 989-001	916,40

** = geändert/modified

Hiermit wird die Ergänzungspreisliste P 25 vom 01.April.1992 ungültig.
 Former supplement to pricelist P 25, dated 01.april.1992, is not valid anymore.

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**Preisliste
zum Katalog
DS 270/E
„Satelliten-
Empfangssysteme“**

**Price List
Catalogue DS 270/E
"Satellite
Receiving
Systems"**

Gültig ab / valid from

1. August 1992

Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each	Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
CAS 2400 B	913 596-001	30,—	CSA 1860 E	813 519-001	1.195,—
CAS 5585 D	913 631-001	29,50	CSA 2400 A	913 567-001	51,—
CAS 5585 F	913 616-002	14,80	CSA 2410 L	913 668-...	1.710,—
CBW 7912 A	913 703-001	347,—	CSA 2460 E	913 518-001	952,—
CDB 1200 G	913 605-001	47,—	CSC 4210 C	913 520-002	230,—
CDB 1205 G	913 698-001	79,50	CSC 6211 H 1,1 dB	913 765-101	144,—
CDB 1518 A	913 600-001	64,—	CSC 6211 H 1,3 dB	913 765-103	126,—
CDB 2400 A	913 676-001	127,—	CSC 7211 H 1,1 dB	913 624-101	144,—
CDF 850 A	913 706-001	24,—	CSC 7211 H 1,3 dB	913 624-103	126,—
CDS 7015 E	913 784-001	678,—	CSC 7225 H 1,1 dB	913 797-101	162,—
CDS 7032 1,1 dB	913 800-001	441,—	CSC 7311 P 1,0 dB	913 802-001	234,—
CDS 7032 1,3 dB	913 800-003	414,—	CSC 7311 P 1,3 dB	913 802-003	206,—
CDS 7048 1,1 dB	913 801-001	432,—	CSC 7322 H 1,1 dB	913 826-101	295,—
CDS 7048 1,3 dB	913 801-003	405,—	CSC 7322 H 1,3 dB	913 826-103	252,—
CDS 7322 H	913 831-003	316,—	CSC 7348 H 1,1 dB	913 825-101	277,—
CDS 7348 H	913 830-003	298,—	CSC 7348 H 1,3 dB	913 825-103	234,—
CDS 7914 B-GA	913 704-201	2.224,—	CSC 8211 U	913 693-101	126,—
CDS 9255 H	913 790-001	502,—	CSC 9211 H	913 614-101	108,—
CDS 9285 H	913 791-001	502,—	CSI 7918 A	913 705-001	140,—
CDS-SET 7014 H	913 798-105	249,—	CSM 2000 B	913 626-001	230,—
CEM 550 A	913 666-001	29,50	CSM 2800 B	913 645-001	282,—
CEM 850 A	913 665-001	56,50	CSM 4000 B	913 643-001	299,—
CEM 1200 B	913 608-001	119,—	CSM 6000 B	913 623-001	337,—
CEM 2400 B	913 595-001	295,—	CSP 1200 B	913 509-202	108,—
CEM 2401 A	913 675-001	278,—	CSP 1210 C	913 528-102	45,—
CHE 1501 A	913 795-001	2.550,—	CSP 1210 E	913 736-101	50,—
CHE 1502 A	913 796-001	2.203,—	CSR 250 A	913 820-001	320,—
CHE 1801 A	913 683-001	2.843,—	CSR 300 B	913 794-002	396,—
CHE 1802 A	913 710-001	2.692,—	CSR 1300 A	913 806-001	373,—
CHE 2401 A	913 684-001	3.661,—	CSR 1500 A	913 818-001	340,—
CHE 2402 A	913 711-001	3.511,—	CSR 2200 A	913 807-001	385,—
CPB 1000	913 817-001	60,—	CSR 2300 A	913 813-001	655,—
CPM 850 B	913 644-001	220,—	CSR 2300 AK	913 814-001	835,—
CPM 1200 B	913 610-002	388,—	CSR 2500 A	913 819-001	495,—
CPM 1800 B	913 594-001	527,—	CSW 2020 A	913 593-001	27,—
CPS 1418 F	913 789-001	37,50	CSW 2021 A	960 460-001	18,30
CRP 3300 A	913 837-001	685,—	CSW 9021 A	913 635-001	16,80
CSA 850 A	913 617-002	15,60	CZR 2001 A	913 625-002	15,30
CSA 1200 A	913 607-002	36,50	DSR 2000 B	913 672-001	750,—
CSA 1212 G	913 604-001	610,—	DSU 8420 L	913 569-001	40,—
CSA 1500 A	913 601-001	44,—	DSU 8431 L	913 514-001	40,—
CSA 1510 L	913 597-002	452,—	DSU 8620	913 571-001	40,—
CSA 1800 A	913 602-001	44,—	DSU 8631	913 516-001	40,—
CSA 1810 L	913 598-002	628,—	EWG 100 G	913 767-001	2.998,—

Typ Type	Bestell-Nummer Ordering code	Preis DM/Stück Price DM each
FESAT 550 A	913 664-001	144,—
FESAT 850 A lichtgrau	913 663-001	257,—
FESAT 850 A sepiabraun	913 663-003	267,—
FESAT 850 A orangebraun	913 663-004	267,—
FESAT 850 B lichtgrau	913 799-001	322,—
FESAT 850 C eisengrau	913 835-011	336,—
FESAT 850 C lichtgrau	913 835-001	336,—
FESAT-SET 550 A	913 752-003	395,—
FESAT-SET 850 E-GA	913 762-001	808,—
FLAT-SAT 400 CL	913 773-001	338,—
FLAT-SAT 600 L	913 793-001	560,—
HIT FESAT 820 C lichtgrau	913 815-001	165,—
HIT FESAT 820 C eisengrau	913 815-011	165,—
RC 200	913 636-001	52,—
VSC 7211 A	913 750-001	1.202,—
VSC 7211 A	913 750-003	1.785,—
VSC 9211 A	913 751-001	1.202,—
VSC 9211 A	913 751-003	1.785,—
WHS 2	913 792-001	14,—

Allgemeine Lieferbedingungen

1. Vertragsabschluß

1.1 Für alle unsere Lieferungen gelten die Lieferbedingungen. Der Besteller anerkennt dies durch Erteilung seiner ersten Bestellung. Abweichende Bedingungen werden auch dann nicht Vertragsbestandteil, wenn wir ihnen weder widersprechen noch vorbehaltlos liefern bzw. die Zahlung annehmen.

1.2 Unsere Angebote erfolgen freibleibend.

1.3 Sowohl über Vertreter als auch direkt erteilte Aufträge sind erst nach Absendung unserer schriftlichen Bestätigung oder Bereitstellung der Ware zur Übergabe verbindlich. Unser Schweigen gilt im Zweifel als Ablehnung.

2. Lieferpflichten

2.1 Unsere Vertragspflichten ergeben sich ausschließlich aus unserer Auftragsbestätigung.

2.2 Die Waren werden in üblicher Beschaffenheit geliefert. Bei Massenartikeln gilt ein Ausschuß bis zu 10% als handelsüblich.

2.3 Kleinere Abweichungen, Konstruktionsänderungen sowie Mehr- oder Minderlieferungen bis zu 10% bleiben vorbehalten.

2.4 Die Mindestabnahmemenge entspricht dem Inhalt unserer jeweiligen Original-Verkaufsverpackungen.

2.5 Angegebene Lieferfristen sind unverbindlich. Insbesondere höhere Gewalt, Streik, Aussperung, Rohstoff- und Energiemangel, Unfälle, Transport-, Fabrikations- und Betriebsstörungen – gleichgültig, ob im eigenen Betrieb oder bei Zulieferanten – berechtigen uns, Lieferfristen entsprechend zu verlängern oder die Leistungen zu verweigern.

2.6 Werden uns nach Vertragsabschluß Tatsachen bekannt, die die Zahlungsfähigkeit des Bestellers beeinträchtigen können, so dürfen wir entweder sofortige Vorauszahlung verlangen oder vom Vertrag ersatzlos zurücktreten.

2.7 Alle Lieferungen erfolgen ab Werk. Die Versandkosten frei Bestimmungs-Station einschl. Verpackung tragen wir nur bei Netto-Auftragswerten über 750,- DM. Eine Transport-Versicherung schließen wir auf ausdrücklichen Wunsch für den Besteller ab, wenn er die Kosten übernimmt.

3. Gewährleistung

3.1 Wir übernehmen für die von uns gelieferte Ware eine Gewährleistung von 6 Monaten, für unsere Autoantennen und Einbruch-Meldesysteme gilt eine Frist von 12 Monaten. Diese Frist beginnt mit dem Tage der Auslieferung an den Besteller bzw. bei Wiederverkäufem mit dem Tage der Veräußerung an den Endabnehmer.

3.2 Berechtigte Beanstandungen werden nach unserer Wahl entweder durch Nachbesserung oder Neulieferung erledigt. Weitergehende Ansprüche (auch aus zugesicherten Eigenschaften) sind ausgeschlossen.

3.3 Die Geltendmachung von Gewährleistungsansprüchen setzt die Vorlage entsprechender Beweismittel voraus. Mängelrügen müssen innerhalb von 8 Tagen schriftlich erhoben werden.

3.4 Bei unberechtigten Rügen berechnen wir die uns entstandenen Kosten einschl. Rückfracht.

4. Sonstige Schadenersatzansprüche

Anderweitige Schadenersatzansprüche des Bestellers gegen den Auftragnehmer, seine Erfüllungs- und Verrichtungsgehilfen, gleich aus welchem Rechtsgrund, sind ausgeschlossen. Dies gilt insbesondere für Folgeschäden.

5. Eigentumsvorbehalt

5.1 Alle Lieferungen erfolgen unter Eigentumsvorbehalt, der bis zur Begleichung aller Forderungen von Unternehmen der HIRSCHMANN-Gruppe bestehen bleibt.

5.2 Vor dem Erlöschen des Eigentumsvorbehaltes darf die Ware nur weiterveräußert werden, wenn der Kunde entweder unseren Eigentumsvorbehalt offenlegt und dieser aufrechterhalten wird oder hiermit alle Forderungen gegen Abnehmer unseres Kunden an uns abgetreten werden, und zwar bis zu einem Betrage von 120% der jeweiligen Gesamtforderung. Solange unser Kunde seinen Zahlungsverpflichtungen voll nachkommt, ist er zur Einziehung der abgetretenen Forderungen berechtigt. Bei Vermischung und Verarbeitung der Ware tritt der Käufer hiermit seine Eigentums- oder Miteigentumsrechte an uns ab.

5.3 Zugriffe Dritter auf unsere Rechte zeigt uns der Käufer unverzüglich an. In jedem Falle weist er den Dritten sofort auf unsere Rechte ausdrücklich hin.

6. Preise und Zahlungsbedingungen

6.1 Unsere Preise verstehen sich, sofern nichts anderes vereinbart wird, ab Werk, in DM, ohne Verpackungs- und Versandkosten. Zu den Preisen kommt die gesetzliche Mehrwertsteuer in der jeweils gültigen Höhe hinzu.

6.2 Wir berechnen die bei Vertragsabschluß vereinbarten bzw. gültigen Preise, die auf den zu dieser Zeit maßgebenden Kostenfaktoren basieren. Sollten sich zwischen Vertragsabschluß und vereinbarter Lieferungs-/Leistungszeit diese Kostenfaktoren (insbesondere Material, Löhne, Energie, Abgaben, Fracht, DM-Wechselkurse usw.) ändern, so sind wir berechtigt, eine entsprechende Preisänderung vorzunehmen. Tritt der Besteller nicht als Kaufmann auf, bzw. gehört der Vertrag nicht zum Betrieb seines Handelsgewerbes, gilt dies nur, wenn zwischen Vertragsabschluß und Liefer- bzw. Leistungszeit mehr als 4 Monate liegen.

6.3 Unsere Rechnungen sind innerhalb 30 Tagen nach Rechnungsausgangsdatum ohne jeden Abzug fällig.

6.4 Treten nach Auslieferung der Ware Umstände ein, die befürchten lassen, der Besteller werde seiner Zahlungsverpflichtung nicht nachkommen, so tritt die Fälligkeit sofort ein. Dies gilt insbesondere, wenn der Besteller andere fällige Forderungen nicht begleicht. Weitere Lieferungen erfolgen nur gegen Vorauszahlung.

6.5 Zahlungen werden stets auf die älteste Schuld geleistet.

6.6 Wechsel und Schecks gelten erst mit Einlösung als Zahlung. Wechselzahlungen müssen vorher schriftlich vereinbart werden. Diskont- und sonstige Wechselkosten gehen zu Lasten des Bestellers und sind sofort ohne jeden Abzug fällig. Für die rechtzeitige Vorlegung und Weiterberechnung von Wechselprotesten haften wir nicht.

6.7 Die Aufrechnung mit von uns bestrittenen und/oder nicht rechts

kräftig festgestellten Gegenansprüchen des Bestellers ist nicht statthaft. Ein Zurückbehaltungsrecht kann der Besteller nur aufgrund von Gegenansprüchen aus demselben Vertrag geltend machen.

6.8 Bei verspäteter Zahlung oder Stundung werden Zinsen mit 4% p.a. über dem Diskontsatz der Deutschen Bundesbank berechnet, zuzüglich Mehrwertsteuer.

6.9 Leistet der Besteller bei Fälligkeit keine Zahlungen, so können wir die Weiterarbeit an laufenden Aufträgen einstellen und sofortige Vorauszahlung für alle, auch für die noch nicht erledigten Aufträge oder entsprechende Sicherheitsleistung, verlangen. Kommt der Besteller unserem Verlangen auf Vorauszahlung oder Sicherheitsleistung innerhalb angemessener Frist nicht nach, sind wir berechtigt, vom Vertrag (bzw. von den Verträgen) zurückzutreten und dem Besteller die bis dahin entstandenen Kosten einschließlich entgangenem Gewinn in Rechnung zu stellen.

6.10 An Vertreter und Beauftragte kann mit befreiender Wirkung nur bezahlt werden, wenn diese schriftliche Inkasso-Vollmacht nachweisen.

6.11 Gutschriften für zurückgenommene Ware erfolgen unter Abzug einer angemessenen Gebühr zur verkaufsfähigen Wiederherstellung der Ware. Nach Kundenauftrag gefertigte Waren bleiben von Rücknahme und Gutschrift ausgeschlossen, ausgenommen bei von uns anerkannten Mängelrügen.

7. Gerichtsstand u.a.

7.1 Es gilt ausschließlich das Recht der Bundesrepublik Deutschland. Erfüllungsort ist Esslingen/Neckar; dasselbe gilt für den Gerichtsstand auch dann, wenn der Kunde nicht Vollkaufmann ist und wir unsere Rechte im Mahnverfahren geltend machen.

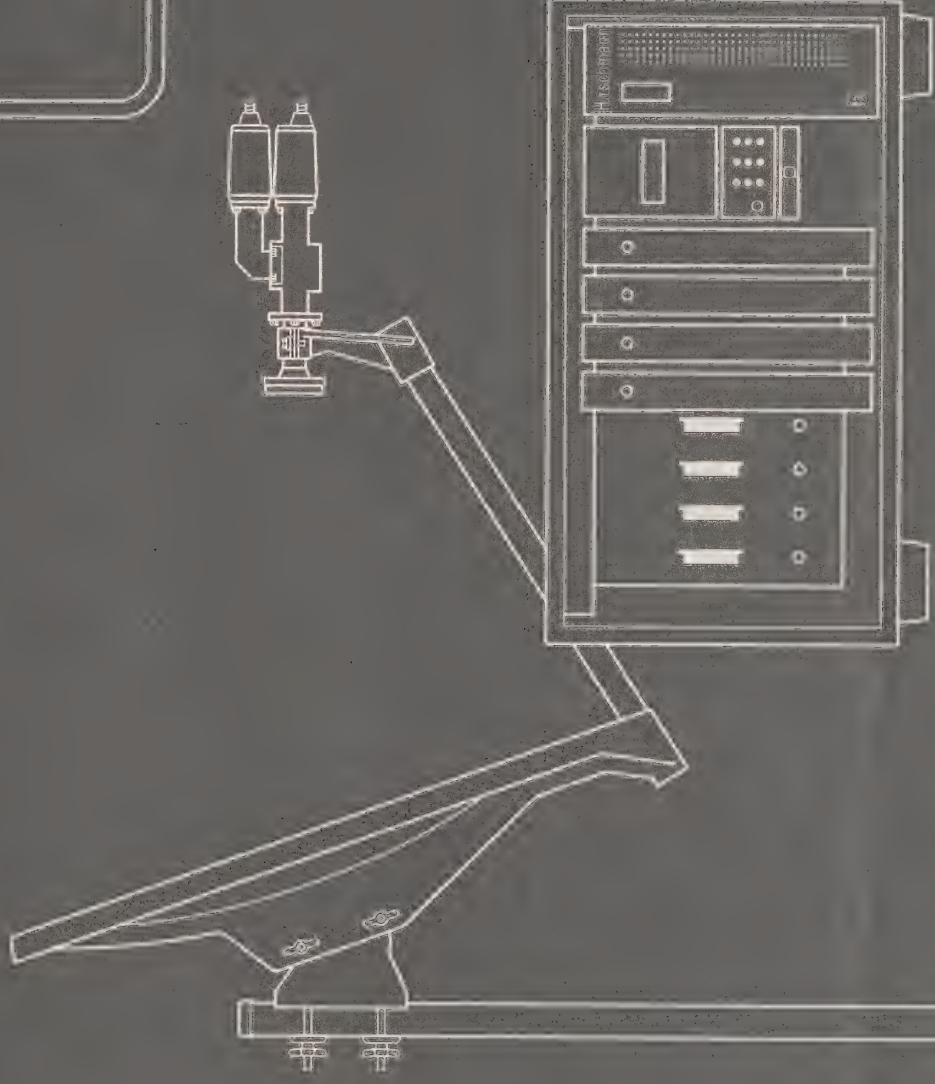
7.2 Sollte eine der vorstehenden Klauseln unwirksam sein, so dürfen wir sie durch eine anderslautende Bestimmung ersetzen, die dem Sinn und Zweck möglichst nahe kommt.



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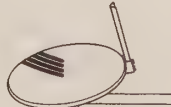
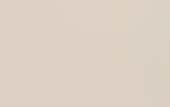
System Components for Satellite Reception

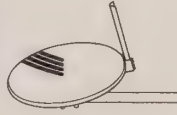


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Please note:
All indications in the columns "catalogue" and "page"
refer to the german versions of the corresponding
publication.

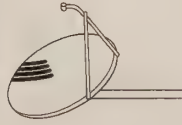
Type	Designation	Application	Technical data	Order No.	Catalogue	Page
Parabolic and flat antennas						
	FESAT 550 A	Parabolic reflector – offset – light grey	used in individual ASTRA satellite reception systems. The package contains the reflector and the converter support. CEM 550 A mast mount must be ordered separately. CDS-SET 7014 H, CDS 8911 B, -7015 E, -7032/... and -7048/... reception systems can be used.	913 664-001	DS 270	P. 8
			Dish diameter Frequency range Gain in frequency range Half-power width Offset angle Figure of merit G/T Wind load Material Weight Package size			
			Dia. 0.55 m 10.95 ... 12.75 GHz 34.2 ... 35.2 dBi 3° 24.6° 12.3 dB/K 276 N glass-fibre reinforced plastic 3 kg 68.5 x 67.5 x 14.5 cm			
			up to 20 m high			
	FESAT-SET 550 A	Complete package for ASTRA individual antenna reception	ASTRA individual satellite receiving system. The package comprises all components such as dish, strut, mast mount and integrated CDS 7014 H reception system and CAS 5585 K feed holder. The polarization planes are switched over by 14/18 V via the coaxial cable.	913 752-003/4	new	
			Dish diameter Frequency range Scope of supply: Parabolic reflector with converter support Feed holder Mast mount Reception system Noise figure Weight Package size			
			Dia. 0.55 m 10.95 ... 11.7 GHz 1x FESAT 550 A 1x CAS 5585 K 1x CEM 550 A 1x CDS 7014 H 1.5 dB max. 5.3 kg 68.5 x 67.5 x 14.5 cm			
			Phase-out model			
	FESAT-SET 550 A	Complete package for ASTRA individual antenna reception	ASTRA individual satellite receiving system. The package comprises all components such as dish, strut, mast mount and integrated reception system. The polarization planes are switched over by an additional control cable or in conjunction with the CPS 1418 F module.	913 752-002	DS 270	P. 8
			Dish diameter Frequency range Scope of supply: Parabolic reflector with converter support Feed holder Mast mount Reception system Noise figure Weight Package size			
			Dia. 0.55 m 10.95 ... 11.7 GHz 1x FESAT 550 A 1x CAS 5585 F 1x CEM 550 A 1x CSA 850 A 1x CSP 1210 E 1x CSC 7211 H 1.3 dB max. 5.8 kg 68.5 x 67.5 x 14.5 cm			
			Phase-out model			
	FESAT 850 A	Parabolic reflector – offset – light grey	used for individual and CATV systems to receive ASTRA, Kopernikus or Eutelsat II. The package contains the reflector and the converter support. The CEM 850 A mast mount must be ordered separately. The CDS-SET 7014 H, CDS 8911 B, -7015 E, -7032/... and -7048/... reception systems can be used.	913 663-001	DS 270	P. 8
			Dish diameter Frequency range Gain in frequency range Half-power width Offset angle Figure of merit G/T Wind load Material Weight Package size			
			Dia. 0.85 m 10.95 ... 12.75 GHz 38.2 ... 39.0 dBi 2° 24.6° 16.2 dB/K 660 N glass-fibre reinforced plastic 8.7 kg 94.5 x 96 x 20 cm			
			up to 20 m high			
	FESAT 850 A	Parabolic reflector – offset – sepia brown	used for individual and CATV systems to receive ASTRA, Kopernikus or Eutelsat II. The package contains the reflector and the converter support. The CEM 850 A mast mount must be ordered separately. The CDS-SET 7014 H, CDS 8911 B, -7015 E, -7032/... and -7048/... reception systems can be used.	913 663-003	new	
			Dish diameter Frequency range Gain in frequency range Half-power width Offset angle Figure of merit G/T Wind load Material Weight Package size			
			Dia. 0.85 m 10.95 ... 12.75 GHz 38.2 ... 39.0 dBi 2° 24.6° 16.2 dB/K 660 N glass-fibre reinforced plastic 8.7 kg 94.5 x 96 x 20 cm			
			up to 20 m high			

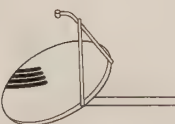



Type	Designation	Application	Technical data	Order No.	Catalogue Page
FESAT 850 A	Parabolic reflector – Offset – orange brown	used for individual and CATV systems to receive ASTRA, Kopernikus or Eutelsat II. The package contains the reflector and the converter support. The CEM 850 A mast mount must be ordered separately. The CDS-SET 7014 H, CDS 8911 B, -7015 E, -7032/... and -7048/x reception systems can be used.	Dish diameter Frequency range Gain in frequency range Half-power width Offset angle Figure of merit G/T Wind load Material Weight Package size	913 663-004	new
			Dia. 0.85 m 10.95 ... 12.75 GHz 38.2 ... 39.0 dBi 2° 24.6° 16.2 dB/K 660 N glass-fibre reinforced plastic 8.7 kg 94.5 x 96 x 20 cm		
FESAT 850 A	Parabolic reflector – Offset – oxide red/brown	used for individual and CATV systems to receive ASTRA, Kopernikus or Eutelsat II. The package contains the reflector and the converter support. The CEM 850 A mast mount must be ordered separately. The CDS-SET 7014 H, CDS 8911 B, -7015 E, -7032/... and -7048/x reception systems can be used.	Dish diameter Frequency range Gain in frequency range Half-power width Offset angle Figure of merit G/T Wind load Material Weight Package size	913 663-002	Phase-out model
			Dia. 0.85 m 10.95 ... 12.75 GHz 38.2 ... 39.0 dBi 2° 24.6° 16.2 dB/K 660 N glass-fibre reinforced plastic 8.7 kg 94.5 x 96 x 20 cm		
FESAT 850 B	Parabolic reflector – Offset – light grey	used for individual and CATV systems to receive ASTRA, Kopernikus or Eutelsat II. The package contains the reflector, the converter support and the CEM 850 A mast mount. The CDS-SET 7014 H, CDS 8911 B, -7015 E, -7032/... and -7048/x reception systems can be used.	Dish diameter Frequency range Gain in frequency range Half-power width Offset angle Figure of merit G/T Wind load Material Weight Package size	913 799-001	new
			Dia. 0.85 m 10.95 ... 12.75 GHz 38.2 ... 39.0 dBi 2° 24.6° 16.2 dB/K 660 N glass-fibre reinforced plastic 10.8 kg 94.5 x 96 x 20 cm		
FESAT 850 F	Parabolic reflector – Offset – light grey	used for individual and CATV systems to receive ASTRA, Kopernikus or Eutelsat II. The package contains the reflector, converter support, the CAS 5585 F feed holder, the CSA 850 A feed system and the CEM 850 A mast mount.	Dish diameter Frequency range Gain in frequency range Half-power width Offset angle Figure of merit G/T Wind load Material Weight Package size	913 804-001	new Export only
			Dia. 0.85 m 10.95 ... 12.75 GHz 38.2 ... 39.0 dBi 2° 24.6° 16.2 dB/K 660 N glass-fibre reinforced plastic 11 kg 94.5 x 96 x 20 cm		
FESAT- SET 850 E	Complete package for ASTRA individual reception	Complete CATV reception antenna. 24 ASTRA programs can be switched to one cable in any 4 variants. For any two variants, a KWS 0922 F or 0923 F must be interconnected. The package contains all components such as reflector, converter support, mast mount and ready assembled reception system	Dish diameter Scope of supply Parabolic reflector with converter support Mast mount Feed holder Reception system	913 762-001	Phase-out model
			1x FESAT 850 A 1x CEM 850 A 1x CAS 5585 F 1x CSA 850 A Feed system Polarization coupler SHF converter 1x CSP 1200 B 1x CSC 7211 H 1x CSC 6211 H Noise figure 1.3 dB max.		



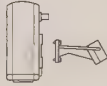

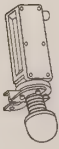
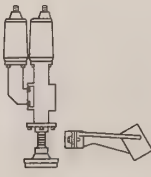
Parabolic and flat antennas



Type	Designation	Application	Technical data	Order No.	Catalogue	Page
Parabolic and flat antennas 	CSA 1212 G	Parabolic reflector – offset – for all satellites in connection with CSA 1200 A feed system, CSP 1200 B polarization coupler and the CSC... converters, excellent for CATV/large CATV applications for ASTRA, Kopernikus, Eutelsat and Intelsat. Mast mounts 1) to fit CEM 1200 B, CPM 1200 B with 4000 B motor-driven spindle.	Dish diameter Frequency range Gain in frequency range Half-power width Offset angle Figure of merit G/T Material Weight Package size	913 604-001	DS 270	P. 12
	CSA 1510 L	Parabolic reflector – symmetrical – for all satellites in connection with CSA 1500 A feed system, CSP 1200 B polarization coupler and the CSC... converters, excellent for CATV/large CATV applications for ASTRA, Kopernikus, Eutelsat and Intelsat. Mast mounts 1) to fit CEM 2400 B, CPM 1800 B with 6000 B motor-driven spindle.	Dish diameter Frequency range Gain in frequency range Half-power width Figure of merit G/T Material Weight Package size	913 597-002	DS 270	P. 14
	CSA 1810 L	Parabolic reflector – symmetrical – for all satellites in connection with CSA 1800 A feed system, CSP 1200 B polarization coupler and the CSC... converters, excellent for CATV/large CATV applications for ASTRA, Kopernikus, Eutelsat and Intelsat. Mast mounts 1) to fit CEM 2400 B, CPM 1800 B with 6000 B motor-driven spindle.	Dish diameter Frequency range Gain in frequency range Half-power width Figure of merit G/T Material Weight Package size	913 598-002	DS 270	P. 14
	CSA 2410 L	Parabolic reflector – symmetrical – for all satellites in connection with CSA 1500 A feed system, CSP 1200 B polarization coupler and the CSC... converters, excellent for CATV/large CATV applications for ASTRA, Kopernikus, Eutelsat and Intelsat. Mast mounts 1) to fit CEM 2401 B.	Dish diameter Frequency range Gain in frequency range Half-power width Figure of merit G/T Material Weight Package size	913 668-001	DS 270	P. 16
	FLATSAT 400 CL	Flat reflector – left-hand circular – Flat reflector to receive left-hand circular polarized signals, e.g. TV-SAT. The package comprises all components such as reflector, mast mount and assembled reception system.	Dish diameter Frequency range Gain in frequency range Half-power width Figure of merit G/T Material Weight Package size	913 773-001	Export only	
Antenna accessories 						
CDB 1200 G	Set of struts with feed holder	for CSA 1212 G reflectors for securing the CSA 1200 A feed system.	Weight Package	913 605-001	DS 270	P. 21
CDB 1205 G	Set of struts with feed holder	for CSA 1212 G reflector in conjunction with DSU... reception systems for circular polarized reception e.g. TV-SAT.	Weight Package	913 698-001	new	
CDB 1518 A	Set of struts with feed holder	for CSA 1510 L/1810 L reflector to secure CSA 1500 A/1800 A feed system	Weight Package size	913 600-001	DS 270	P. 21
CDB 2400 A	Set of struts with feed holder	for CSA 2410L reflector to secure CSA 1500 A feed system.	Weight Package size	913 676-001	DS 270	P. 21

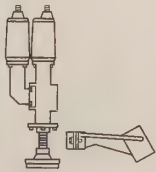


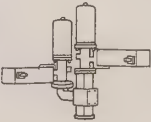


¹⁾ Mast mount and set of struts must be
ordered separately

Reception systems	Type	Designation	Application	Technical data	Order No.	Catalogue	Page
	CDS-SET 7014 H	Individual system	for individual systems in 11 GHz band, e.g. for ASTRA, Eutelsat or Intelsat in conjunction with FESAT... The package includes a CAS 5585 K. The polarization planes are switched over by 14/18 V via the coaxial cable.	Input frequency range Output frequency range System noise figure SHF converter noise figure Polarization discrimination Gain Output level Operating voltage Control signal for polarizer Current consumption Output impedance	10.95 ... 11.7 GHz 0.95 ... 1.7 GHz 1.5 dB max. 1.3 dB max. ≥ 20 dB > 50 dB max. 101 dBμV 12 ... 14 V 16 ... 24 V 14/18 V < 220 mA 75 Ohm /F-Connector	913 798-105	new
	CDS 8911 B	Individual system	for FESAT... to set up individual systems to receive Kopernikus, Eutelsat II or in conjunction with a polar mount to form a multisat reception system. The system is ready assembled; the CAS 5585 F feed holder is included.	Input frequency range ¹⁾ Output frequency range ¹⁾ System noise figure ¹⁾ SHF converter noise figure ¹⁾ Input frequency range ²⁾ Output frequency range ²⁾ System noise figure ²⁾ SHF converter noise figure ²⁾ Switchover voltage Polarization discrimination Gain Output level Operating voltage Current consumption Output impedance	10.95 ... 11.7 GHz 0.95 ... 1.7 GHz 1.8 dB max. 1.5 dB max. 12.5 ... 12.75 GHz 1.5 ... 1.75 GHz 2.0 dB max. 1.7 dB max. 12 V (11 GHz), 0 V (12.5 GHz) ≥ 20 dB > 50 dB max. 101 dBμV 12 ... 24 V 250 mA max. 75 Ohm /F-Connector	913 747-001	new
	CDS 9255 H	Individual and CATV system	for FESAT 550../850.. for the additional reception of "digital satellite radio" via DFS 1 Kopernikus. The FESAT... is pointed at the ASTRA. Interconnection with CKR 2100 F for KWS 0923 F is possible for single-cable applications. The system is ready assembled. A feed holder and a WSH 3 weather protection hood are supplied. Only in conjunction with components CSA 850 A, CSP... and FESAT-SET 550 A (Order No. 913 752-002).	Input frequency range Output frequency range Output frequency DSR System noise figure SHF converter noise figure Gain Output level Operating voltage Current consumption Output impedance	12.5 ... 12.75 GHz 1.025 ... 1.275 GHz 1175 MHz 1.5 dB max. 1.3 dB max. > 50 dB max. 101 dBμV 15 ... 24 V < 170 mA 75 Ohm /F-Connector	913 790-001	new
	CDS 7015 E	CATV system	with extremely low noise figure for FESAT... to set up CATV systems. In combination with KWS 0922 F or 0923 F couplers, a single cable solution can be implemented for 24 programmes. Due to the low noise figure, particularly suited for small reflectors or at the edge of coverage zones. The system is ready assembled. A CAS 5585 F feed holder is included.	Input frequency range Output frequency range System noise figure SHF converter noise figure Polarization discrimination Gain Output level Operating voltage Current consumption Output impedance	10.95 ... 11.7 GHz 0.95 ... 1.7 GHz 1.3 dB max. 1.1 dB max. ≥ 30 dB > 50 dB 2 x 104 dBμV max. 12 ... 24 V 2 x 170 mA 75 Ohm /F-Connector	913 784-001	Phase-out model

¹⁾ for the 11 GHz band

²⁾ for the 12.5 GHz band

Reception systems		Type	Designation	Application	Technical data		Order No.	Catalogue	Page
		CDS 7032/1.1	CATV system	with extremely low noise figure for FESAT... to set up CATV systems to receive ASTRA. In combination with the KWS 0922 F coupler, a single-cable application for 32 programmes can be implemented. Due to the low noise figure, it is specially suited for small reflectors or at the edges of coverage zones. The system is ready assembled. A CAS 5585 F feed holder and a WSH 2 weather protection hood are provided.	Input frequency range Output frequency range System noise figure SHF converter noise figure Polarization discrimination Gain Output level Operating voltage Current consumption Output impedance	10.95 ... 11.7 GHz 0.95 ... 2.05 GHz 1.3 dB max. 1.1 dB max. ≥ 30 dB > 50 dB 2 x 104 dBμV max. 12 ... 24 V 2 x 170 mA 75 Ohm /F-Connector	913 800-001	new	
		CDS 7032/1.3	CATV system	for FESAT... to set up CATV systems to receive ASTRA. In combination with the KWS 0922 F coupler, a single-cable solution for 32 programmes can be implemented. The system is ready assembled. A CAS 5585 F feed holder and a WSH 2 weather protection hood are provided.	Input frequency range Output frequency range System noise figure SHF converter noise figure Polarization discrimination Gain Output level Operating voltage Current consumption Output impedance	10.95 ... 11.7 GHz 0.95 ... 2.05 GHz 1.5 dB max. 1.3 dB max. ≥ 30 dB > 50 dB 2 x 104 dBμV max. 12 ... 24 V 2 x 170 mA 75 Ohm /F-Connector	913 800-003	new	
		CDS 7048/1.1	CATV system	with extremely low noise figure for FESAT... to set up CATV systems. For 2-cable solutions or switchover distribution using CKR 2400 F to receive all programmes in the 11 GHz band, e.g. ASTRA or Eutelsat. Due to the low noise figure, it is specially suited for small reflectors or at the edges of coverage zones. The system is ready assembled. A CAS 5585 F feed and a WSH 2 weather protection hood are provided.	Input frequency range Output frequency range System noise figure SHF converter noise figure Polarization discrimination Gain Output level Operating voltage Current consumption Output impedance	10.95 ... 11.7 GHz 0.95 ... 1.7 GHz 1.3 dB max. 1.1 dB max. ≥ 30 dB > 50 dB 2 x 104 dBμV max. 12 ... 24 V 2 x 170 mA 75 Ohm /F-Connector	913 801-001	new	
		CDS 7048/1.3	CATV system	for FESAT... to set up CATV systems. For 2-cable solutions or switchover distribution using CKR 2400 F to receive all programmes in the 11 GHz band, e.g. ASTRA or Eutelsat. The system is ready assembled. A CAS 5585 F feed holder and a WSH 2 weather protective hood are provided.	Input frequency range Output frequency range System noise figure SHF converter noise figure Polarization discrimination Gain Output level Operating voltage Current consumption Output impedance	10.95 ... 11.7 GHz 0.95 ... 1.7 GHz 1.5 dB max. 1.3 dB max. ≥ 30 dB > 50 dB 2 x 104 dBμV max. 12 ... 24 V 2 x 170 mA 75 Ohm /F-Connector	913 801-003	new	

Reception systems	Type	Designation	Application	Technical data	Order No.	Catalogue	Page
	CDS 7914 B	CATV system	for CSA 1212 G, CSA 1510 L, CSA 1810 L, CSA 2410 L to receive all programmes from DFS 1 Kopernikus. The reception system is fully preassembled. The feed system to fit each reflector must be ordered separately. Using the KWS 0911 F, the two SHF converters in one polarization plane can be switched by cable.	Input frequency range ¹⁾ Output frequency range ¹⁾ System noise figure ¹⁾ SHF converter noise figure ¹⁾ Output level ¹⁾ Operating voltage ¹⁾ Current consumption ¹⁾ Input frequency range ²⁾ Output frequency range ²⁾ System noise figure ²⁾ SHF converter noise figure ²⁾ Output level ²⁾ Operating voltage ²⁾ Current consumption ²⁾ Polarization discrimination Gain Output impedance	913 704-001	DS 270	P. 38
	DSU 8431 L	Reception system w. bandpass filter	Broadcasting satellites (DBS), left-hand circular polarization, e.g. TV-SAT	11.45 ... 11.7 GHz 1.45 ... 1.7 GHz 1.8 dB max. 1.5 dB max. 2 x 104 dBµV max. 12 ... 18 V 2 x 140 mA 12.5 ... 12.75 GHz 1.05 ... 1.3 GHz 2.3 dB max. 1.3 dB max. 2 x 101 dBµV max. 15 ... 24 V 2 x 170 mA ≥ 30 dB ≥ 50 dB 75 Ohm /F-Connector	913 514-001	DS 270 Phase-out model	P. 30
	DSU 8531 R	Reception system w. bandpass filter	Broadcasting satellites (DBS), right-hand circular polarization, e.g. TDF		913 515-001	DS 270 Phase-out model	P. 30
	DSU 8631	Reception system w. bandpass filter	Broadcasting satellites (DBS), left and right-hand circular polariz., e.g. TV-SAT and TDF		913 516-001	DS 270 Phase-out model	P. 30
	DSU 8420 L	Reception system	Broadcasting satellites (DBS), left-hand circular polarization, e.g. TV-SAT		913 569-001	DS 270 Export only Phase-out model	P. 31
	DSU 8520 R	Reception system	Broadcasting satellites (DBS), right-hand circular polarization, e.g. TDF		913 570-001	DS 270 Export only Phase-out model	P. 31
	DSU 8620	Reception system	Broadcasting satellites (DBS), left and right-hand circular polarization, e.g. TV-SAT and TDF		913 571-001	DS 270 Export only Phase-out model	P. 31
	CAS 5585 F	Feed holder	to secure the CSA 850 A feed system to the converter support of the offset parabolic dishes FESAT 550.../850...	Weight Package size	913 616-002	DS 270	P. 19
	CAS 5585 K	Feed holder	for FESAT... in conjunction with CDS 7014 H SHF converter, to adjust a polarization offset of ±30°.	Weight Package size	only supplied in CDS-SET 7014 H	new	
	CAS 5585 D	Feed holder	for FESAT... in conjunction with DSU... to receive circular polarized signals, e.g. TV-SAT TDF.	Weight Package size	913 631-001	DS 270	P. 19
	CDF 850 A	Double feed holder	for individual systems for the simultaneous reception of DFS 1 Kopernikus and ASTRA. In conjunction with the CDS 7911 B/8911 B reception systems and the CSA 850 A feed system and combinations.	Scope of supply	913 706-001	DS 270	P. 17

¹⁾ for the 11 GHz band
²⁾ for the 12.5 GHz band



Type	Designation	Application	Technical data	Order No.	Catalogue	Page
CSA 850 A	Feed system	for all FESAT... in conjunction with CAS 5585 F. All CSP 1210... polarizers, the CSP 1200 B waveguide switch, CZR 2001 A adapter and all 11 and 12.5 GHz SHF converters CSC... can be mounted.	Polarization Frequency range Output Weight Package size	913 617-002	DS 270	P. 17
			linear 10.95 ... 12.75 GHz C 120 0.13 kg 7.0 x 7.0 x 8.4 cm			

CSA 1200 A	Feed system	for CSA 1212 G in conjunction with CDB 1200 G set of struts. All CSP 1210... polarizers, CSP 1200 B waveguide switches, CZR 2001 A adapter and all 11 and 12.5 GHz SHF converters CSC... can be mounted.	Polarization Frequency range Output Weight Package size	913 607-001	DS 270	P. 17
			linear 10.95 ... 12.75 GHz C 120 0.2 kg 13.5 x 12.1 x 8.0 cm			

CSA 1500 A	Feed system	for CSA 1510 L and CSA 2410L in conjunction with CDB 1518 A set of struts. All CSP 1210... polarizers, CSP 1200 B waveguide switches, CZR 2001 A adapter and all 11 and 12.5 GHz SHF converters CSC... can be mounted.	Polarization Frequency range Output Weight Package size	913 601-001	DS 270	P. 17
			linear 10.95 ... 12.75 GHz C 120 80 g 13.5 x 12.1 x 8.0 cm			

CSA 1800 A	Feed system	for CSA 1810 L in conjunction with CDB 1518 A set of struts. All CSP 1210... polarizers, CSP 1200 B waveguide switches, CZR 2001 A adapter and all 11 and 12.5 GHz SHF converters CSC... can be mounted.	Polarization Frequency range Output Weight Package size	913 602-001	DS 270	P. 17
			linear 10.95 ... 12.75 GHz C 120 80 g 13.5 x 12.1 x 8.0 cm			





CSP 1210 E	Polarizer – magnetic –	for optional switching through of signals from one of the two linear polarization planes (XY) to one output. Application only in individual systems in conjunction with CSC... 11 and 12.5 GHz SHF converters.	Polarization Frequency range Polarization discrimination Insertion loss Operating current	913 736-101	DS 270	P. 18
			linear 10.95 ... 12.75 GHz ≥ 18 dB 0.4 dB ±35 mA for rotary angle ±45° 75 mA for rotary angle ±90° C 120 R 120			





CPS 1418 F	Polarizer switcher	evaluates the 14/18 V and converts into a current. This eliminates a control line between the receiver and the CSP 1210 E polarizer or CSC 8211 U SHF converter (range switchover).	Frequency range Polarizer power supply of Switching threshold Current consumption Port	913 789-001	new	
			950 ... 1750 MHz 0 mA 5 ... 90 mA (variable) 15 ... 17 V 5 mA 12 mA 2x F-Con. (75 Ohm) supplied stranded wire			



CSP 1200 B	Polarization coupler	to separate signals from the two linear polarization planes to one square wave- guide output. Technically the same as CSP 1200 B with Order No. 913 509-101 but with smaller dimensions.	Frequency range Polarization Polarization discrimination Insertion loss Ports	913 509-202	new	
			10.95 ... 12.75 GHz Dual, linear ≥ 30 dB 0.2 dB C 120 R 120			

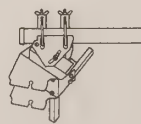
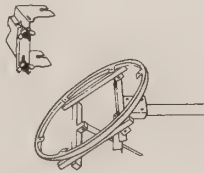
Reception system components		Type	Designation	Application	Technical data	Order No.	Catalogue	Page
  	CBW 7912 A	Frequency coupler	Direction line	to separate frequency bands 10.95 - 11.7 GHz and 12.5 - 12.75 GHz for signals with vertical or horizontal polarization.	Frequency range Input Outputs	10.95 ... 12.75 GHz R 120 R 120	913 703-001 Phase-out model ((?))	P. 36
					Frequency range Directional attenuation at 11.475 GHz at 10.95 ... 12.75 GHz	10.95 ... 12.75 GHz 30 dB 20 dB min.	913 705-001	DS 270
					Polarization Frequency range Insertion loss Input Output Weight	linear 10.95 ... 12.75 GHz 0.1 dB C 120 R 120 0.07 kg	913 625-002	DS 270
					Polarization Input frequency range Output frequency range Gain Noise figure Index 101 Index 103 Index 105 Output level Ports Power supply Current consumption	linear 10.95... 11.7 GHz 0.95... 1.7 GHz > 50 dB 1.1 dB max. 1.3 dB max. 1.5 dB max. 104 dBµV max. R 120 F-Con./75 Ohm 12 ... 24 V 170 mA	913 624-101 -103 -105	P. 32
	CSC 6211 H	SHF Converter - 11 GHz -	SHF Converter - 11 GHz -	operates with an LO of 10.55 GHz. It shifts SAT frequencies in the 1st IF down by 255 MHz. Used for "concatenating" ASTRA frequencies (see CDS 7015 E or CDS 7032/..).	Frequency range Input frequency Output frequency Gain Noise figure Index 101 Index 103 Output level Ports Power supply Current consumption	linear 11.2 ... 11.7 GHz 0.95 ... 1.45 GHz > 50 dB 1.1 dB max. 1.3 dB max. 104 dBµV max. R 120 F-Con./75 Ohm 12 ... 24 V 170 mA	913 765-101 -103	new
					Frequency range Input frequency Output frequency Gain Noise figure Index 101 Index 103 Output level Ports Power supply Current consumption	linear 10.95... 11.7 GHz 1.292... 2.042 GHz > 50 dB 1.1 dB max. 1.3 dB max. 104 dBµV max. R 120 F-Con./75 Ohm 12 ... 24 V 170 mA	913 797-101 -103	new
					Frequency range Input frequency Output frequency Gain Noise figure Index 101 Index 103 Output level Ports Power supply Current consumption	linear 10.95... 11.7 GHz 1.292... 2.042 GHz > 50 dB 1.1 dB max. 1.3 dB max. 104 dBµV max. R 120 F-Con./75 Ohm 12 ... 24 V 170 mA	913 797-101 -103	new
					Frequency range Input frequency Output frequency Gain Noise figure Index 101 Index 103 Output level Ports Power supply Current consumption	linear 10.95... 11.7 GHz 1.292... 2.042 GHz > 50 dB 1.1 dB max. 1.3 dB max. 104 dBµV max. R 120 F-Con./75 Ohm 12 ... 24 V 170 mA	913 797-101 -103	new

Reception system components	Type	Designation	Application	Technical data	Order No.	Catalogue	Page
	CSC 9211 H	SHF Converter - 12.5 GHz -	operates with an LO of 11.450 GHz. The SHF converter is used for the satellite system Kopernikus, Telecom and Eutelsat (12.5 ... 12.75 GHz). Used in CDS 7914 B and CDS 9255 H reception systems.	Polarization Input frequency range Output frequency range Gain Noise figure Output level Ports Power supply Current consumption	913 614-101	DS 270	P. 32
	CSC 8211 U	SHF Converter - 11/12.5 GHz -	operates with an LO of 10 GHz or 11 GHz. For individual systems to receive Kopernikus or in conjunction with a polar mount, also as multisat reception system for ASTRA, Eutelsat, Telecom or Intelsat systems. The SHF converter operates the 11 GHz and 12.5 GHz band at choice.	Polarization Input frequency bands Output frequency bands Gain Noise figure Output level Ports Operating voltage Current consumption Switchover voltage	913 693-101	DS 270	P. 33
	CSC 4210 C	SHF Converter - 4 GHz -	operates with an LO of 5.150 GHz. Associated feed system on request. Used for satellites in the C band such as the Russian systems Gorizont or Arabsat, etc.	Polarization Input frequency range Output frequency range Gain Noise figure Output level Ports Power supply Current consumption	913 520-001	DS 270	P. 33
	VSC 7211 A	SHF Converter - 11 GHz -	operates with an LO of 10 GHz. The SHF converter is designed for data transmission via satellite. A crystal-stabilized oscillator (PLO) provides high frequency accuracy and excellent phase noise properties. Two variants are provided for each requirement profile.	Polarization Input frequency range Output frequency range Gain Noise figure OSC-frequency accuracy/ phase noise 1 kHz / 10 kHz Offset Index 001 Index 003 Output level Ports Power supply Current consumption	913 750-001 -003	new	

Reception system components	Type	Designation	Application	Technical data	Order No.	Catalogue Page
	VSC 9211 A	SHF Converter - 12.5 GHz -	Operates with an LO of 11.3 GHz. The SHF converter is designed for data transmission via satellite. A crystal-stabilized oscillator (PLO) provides high frequency accuracy and excellent phase noise properties. Two variants are provided for each requirement profile.	Polarization Input frequency range Output frequency range Gain Noise figure OSC-frequency accuracy/ phase noise 1 kHz /10 kHzOffset Index 001 Index 003 Output level Ports Power supply Current consumption Material	913 751-001 -003	linear 12.25... 12.75 GHz 0.95... 1.45 GHz > 50 dB 1.8 dB max. ± 20 ppm / -65 / -75 dBc/Hz ± 3 ppm / -70/ -80 dBc/Hz max. 102 dBµV R 120 F-Con./75 Ohm 15 V ±15 % 500 mA
	WSH 1	Weather protection hood	for individual systems with magnetic polarizer, on ASTRA and Kopernikus reception system; used in modular systems and in individual reception systems such as CDS 8911 B and in FESAT SET 550 A.		913 779-001	new
	WSH 2	Weather protection hood	for CATV systems with CSP 1200 B polarization couplers and individual systems with CSP 1210 C mechanical polarizers; used in modular systems such as for CATV systems CDS 7015 E, CDS 7032/.. and CDS 7048/.. and in FESAT SET 850 E and the individual systems CDS 8911 B, CDS 7011B	Material	913 792-001	new
	CHE 1501 A	Reflector heater Basic system	to heat up the CSA 1510 L parabolic reflector in order to melt any snow or ice on the reflector. The warm-up phase can be controlled by means of the EWG 100 G controller. Only the bottom half of the reflector can be heated by the basic system. To heat up the whole reflector, the CHE 1502 A additional system is required.	Outer shell Shell material Voltage Power consumption Power cord Inner shell Shell material Voltage Power consumption Power cord Fixing material with central fastening	913 795-001	new

Heaters	Type	Designation	Application	Technical data	Order No.	Catalogue Page
	CHE 1502 A	Reflector heater Additional system	only in conjunction with the CHE 1501 A reflector heater, basic system. The two systems are used to heat the complete reflector. Required in cold regions with high snowfall.	Outer shell Shell material Voltage Power consumption Power cord Inner shell Shell material Voltage Power consumption Power cord Fixing material without central fastening	2 pcs Hosterene, brown 220 V~ 180 Watt 3 m 1 pc Hosterene, brown 220 V~ 140 Watt 3 m	913 796-001 new
	CHE 1801 A	Reflector heater Basic system	to heat up the CSA 1810 L parabolic reflector in order to melt any snow or ice on the reflector. The warm-up phase can be controlled by means of the EWG 100 G controller. Only the bottom half of the reflector can be heated by the basic system. To heat up the whole reflector, the CHE 1802 A additional system is required.	Outer shell Shell material Voltage Power consumption Power cord Fixing material with central fastening	2 pcs Hosterene, brown 220 V~ 285 Watt 3 m 1 pc Hosterene, brown 220 V~ 150 Watt 3 m	913 683-001 new
	CHE 1802 A	Reflector heater Additional system	only in conjunction with the CHE 1801 A reflector heater, basic system. The two systems are used to heat the complete reflector. Required in cold regions with high snowfall.	Outer shell Shell material Voltage Power consumption Power cord Inner shell Shell material Voltage Power consumption Power cord Fixing material without central fastening	2 pcs Hosterene, brown 220 V~ 285 Watt 3 m 1 pc Hosterene, brown 220 V~ 150 Watt 3 m	913 710-001 new
	CHE 2401 A	Reflector heater Basic system	to heat up the CSA 2410 L parabolic reflector in order to melt any snow or ice on the reflector. The warm-up phase can be controlled by means of the EWG 100 G controller. Only the bottom half of the reflector can be heated by the basic system. To heat up the whole reflector, the CHE 2402 A additional system is required.	Outer shell Shell material Voltage Power consumption Power cord Inner shell Shell material Voltage Power consumption Power cord Fixing material with central fastening	2 pcs Hosterene, brown 220 V~ 545 Watt 3 m 1 pc Hosterene, brown 220 V~ 150 Watt 3 m	913 684-001 new



Heaters	Type	Designation	Application	Technical data	Order No.	Catalogue	Page
	CHE 2402 A	Reflector heater Additional system	only in conjunction with the CHE 2401 A reflector heater, basic system. The two systems are used to heat the complete reflector. Required in cold regions with high snowfall.	Outer shell Shell material Voltage Power consumption Power cord Inner shell Shell material Voltage Power consumption Power cord Fixing material without central fastening	913 711-001	new	
	EWG 100 G	Reflector heater controller	to control all parabolic reflector heaters	Heater controller based on temperature and humidity measurement	913 767-001	new	
Mechanical accessoires	BEG 50 U	Universal clip	to fit pipe diameters of 48 ... 50 mm		810 909-000	DS 2	P. 54
	BEG 60 U	Universal clip	to fit pipe diameters of 60 mm		810 910-000	DS 2	P. 54
	BEG 89 U	Universal clip	to fit pipe diameters of 89 mm		913 690-001	DS 2	P. 54
	CEM 550 A	Mast mount	to permanently align FESAT 550 A reflector. Hot-dip galvanized, elevation setting by means of a scale.	Adjustment range Elevation Azimuth Mast Weight	14° ... 40° 0° ... 360° Dia. 40 ... 60 mm 0.8 kg	DS 270	P. 22
	CEM 850 A	Mast mount	to permanently align FESAT 850 A reflector. Hot-dip galvanized, elevation setting by means of a scale.	Adjustment range Elevation Azimuth Mast Weight	10° ... 45° 0° ... 360° Dia. 50 ... 80 mm 2 kg	DS 270	P. 22
	CEM 1200 B	Mast mount	to permanently align FESAT 1212 G reflector. Hot-dip galvanized, elevation setting by means of a scale.	Adjustment range Elevation Azimuth Mast Weight	10° ... 50° 0° ... 360° Dia. 50 ... 89 mm 6 kg	DS 270	P. 22
	CEM 2400 B	Mast mount	to permanently align CSA 1510 L /1810 L reflector. Hot-dip galvanized, elevation setting by means of a scale.	Adjustment range Elevation Azimuth Mast Weight	16° ... 52° 0° ... 360° Dia. 89 mm 28 kg	DS 270	P. 23
	CEM 2401 A	Mast mount	to permanently align CSA 2410 L reflector. Hot-dip galvanized, elevation setting by means of a scale.	Adjustment range Elevation Azimuth Mast Weight	5° ... 55° 0° ... 360° Dia. 89 mm 37 kg	DS 270	P. 23
	CPM 850 B	Polar mount	for automatic/manual change of satellite positions for FESAT 850 A/B reflectors. Hot-dip galvanized, adjustment scale for azimuth, elevation and declination.	Adjustment range Elevation Azimuth Declination Mast (also continuous) Weight	12° ... 40° 125° 0° ... 10° Dia. 50 ... 80 mm 5 kg	DS 270	P. 24
	CSM 2800 B	Motor spindle	for automatic, remote-controlled adjustment of parabolic reflector. Non- contact, opto-electronic sensor control. Designed for FESAT 850 A/B parabolic reflector, CPM 850 B polar mount, CSM 2000 B antenna positioner.	Stroke Motive force Speed Operating voltage Weight Power cord	max. 280 mm 500 N 5.3 mm/s 36 V/ 0.7 A 3.4 kg 5-conductor, 1.5 m long	DS 270	P. 25










Type	Designation	Application	Technical data		Order No.	Catalogue	Page
			Adjustment range	Elevation Azimuth Declination			
Mechanical accessoires	CPM 1200 B	Polar mount for CSA 1000 G/1212 G reflectors for automatic/manual change of satellite position. Hot-dip galvanized, ball- mounted, adjustment scales for azimuth, elevation and declination.	Mast (Top) Weight	10° ... 60° 120° 4.5° ... 9° Dia. 89 mm 14 kg	913 610-002	DS 270	P. 24
	CSM 4000 B	for automatic, remote-controlled adjustment of parabolic reflector. Non-contact, opto-electronic sensor control. Designed for CSA 1212 G parabolic reflector, CPM 1200 B polar mount, CSM 2000 B antenna positioner.	Stroke Motive force Speed Operating voltage Weight Power cord	max. 400 mm 500 N 5.3 mm/s 36 V/0.7 A 3.7 kg 5-conductor, 1.5 m long	913 643-001	DS 270	P. 25
	CPM 1800 B	for CSA 1510 L/1810 L reflectors for automatic/manual change of satellite position. Hot-dip galvanized, ball- mounted, adjustment scales for azimuth, elevation and declination.	Adjustment range Mast (Top) Weight	10° ... 60° 120° 0° ... 10° Dia. 89 mm approx. 39 kg	913 594-001	DS 270	P. 24
	CSM 6000 B	for automatic, remote-controlled adjustment of parabolic reflector. Non-contact, opto-electronic sensor control. Designed for CSA 1510 L/1810 L parabolic reflector, CPM 1800 B polar mount, CSM 2000 B antenna positioner.	Stroke Motive force Speed Operating voltage Weight Power cord	max. 600 mm 500 N 5.3 mm/s 36 V/0.7 A 4.3 kg 5-conductor, 1.5 m long	913 623-001	DS 270	P. 2
	CSG 1201 A	to install satellite antennas on horizontal surfaces	for antennas with diameters of 1.2 m		813 534-001	DS 2	P. 48
	CSG 1202 A	to install satellite antennas on horizontal surfaces	for antennas with diameters of 0.85 m		913 648-001	-	
	CSG 1802 A	to install satellite antennas on horizontal surfaces	for antennas with diameters of 1.5 m and 1.8 m		813 521-001	DS 2	P. 48
	CSG 2401 A	to install satellite antennas on horizontal surfaces	for antennas with diameters of 2.4 m		813 627-001	DS 2	P. 48
	DAB 50-2	seal between standpipe and cover	for standpipes with diameters of 48 ... 57 mm		601 026-001	DS 2	P. 55
	DAB 50-6	roof seal for inclined roof with pitch of 5° to 50°	for standpipes with diameters up to 60 mm		601 113-000	DS 2	P. 55
	DAB 50-8	roof seal for inclined roof with pitch of 5° to 50°	for standpipes with diameters up to 60 mm		601 094-000	DS 2	P. 55
	DAB 50-9	roof seal for inclined roof with pitch of 5° to 50°	for standpipes with diameters up to 60 mm		601 064-000	DS 2	P. 55
HIT	DAB 52-3 N	roof seal for inclined roof with pitch of 5° to 50°	for standpipes with diameters up to 60 mm; Zinc sheet nozzle, lead sheet plate		601 131-001	DS 2	P. 55
	DAB 60-1	seal between standpipe and cover	for standpipes with diameters of 32 ... 60 mm		910 822-001	DS 2	P. 55



Type		Designation	Application	Technical data	Order No.	Catalogue	Page
Mechanical accessories	ERB 50	Earthing clamp		for standpipes with max. dia. of 60 mm	910 397-000	DS 2	P. 57
	ERB 89	Earthing clamp		for standpipes with max. dia. of 89 mm	913 697-001	DS 2	P. 57
	ES 6	Earthing strip			942 234-001	DS 2	P. 57
	MAKA 15	Standpipe end cap	to terminate antenna standpipes.	to fit pipe diameters of 32 ... 60 mm	910 231-000	DS 2	P. 56
	MAR 50/100	Standpipe		Dia. 50 mm, length 1 m, hot-dip galvanized	913 641-001	DS 2	P. 48
	MZ 50	Mast accessory set	Assembly accessories for installing antenna standpipes of dia. 48 - 50 mm in roofs.	comprising - Mast base - Fixing clip - Standpipe duct - Sealing cuff	910 851-001	DS 2	P. 56
	MAR 60/200	Standpipe		Dia. 60 mm, length 1 m, hot-dip galvanized	913 642-001	DS 2	P. 48
	MZ 60	Mast accessory set	Assembly accessories for installing antenna standpipes of dia. 60 mm in roofs.	comprising - Mast base - Fixing clip - Standpipe duct - Sealing cuff	910 852-001	DS 2	P. 56
	MAR 89/250	Standpipe		Dia. 89 mm, length 1 m, hot-dip galvanized	913 685-001	DS 2	P. 48
	MZ 89	Mast accessory set	Assembly accessories for installing antenna standpipes of dia. 89 mm in roofs.	comprising - Mast base - Standpipe duct - ERB 89 earthing strip	913 689-001	DS 2	P. 56
	MF 63	Standpipe base	to secure antenna standpipes	to fit pipe diameters of 30 ... 60 mm	910 781-001	DS 2	P. 54
	MH 50	Wall bracket	to secure antenna standpipes to outer walls.	to fit pipe diameters of 27 ... 60 mm	601 140-000	DS 2	P. 53
	MHR 950	Wall bracket	to mount FESAT 550 and FESAT 850 offset parabolic antennas to outer walls.	Pipe: Dia. 51 mm Weight: 4.5 kg	913 576-001	DS 2	P. 53



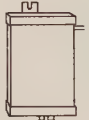
Mechanical accessories	Type			Application	Technical data		Order No.	Catalogue	Page
	Type	Designation							
	MSG 5585	Wall bracket and stand		to fit FESAT..., can be used as stand or wall bracket.	Pipe: Dia. 49 mm Height: 600 mm		913 768-001	new	
	MG 1	Mast housing		to receive locks, distributors, couplers, etc.	for standpipes with max. dia. of 60 mm		847 753-001	DS 2	P. 60
	MG 890	Mast housing		to connect control cable of satellite reception systems.	for standpipes with max. dia. of 89 mm		913 686-001	DS 2	P. 60
	BWS 2900	Band coupler		to interconnect terrestrial and satellite signals.	Frequency range Input 1 0.15 ... 862 MHz Input 2 950 ... 2050 MHz Insertion loss Input 1 0.5 dB Input 2 1.0 dB		947 330-001	DS 2	P. 66
	BWS 2900 F	Band coupler		to interconnect terrestrial and satellite signals, suitable for remote feeding.	Frequency range Input 1 40 ... 862 MHz Input 2 950 ... 2050 MHz Insertion loss Input 1 0.8 dB Input 2 1.2 dB Remote powering each input 300 mA /24 V		947 377-002	DS 2	P. 66
	KWS 0911 F	Partial band coupler		to interconnect satellite signals. Used for Kopernikus CATV CDS 7914 H reception systems.	Frequency range Input 1 950 ... 1275 MHz Input 2 1450 ... 1750 MHz Insertion loss Input 1 1.2 dB Input 2 1.4 dB Remote powering each input 300 mA /24 V		947 408-001	DS 2 Phase-out model	P. 66
	KWS 0912 F	Partial band coupler		to interconnect satellite signals. Used for FESAT 850...: DFS 1 Kopernikus, with partial reception of ASTRA.	Frequency range Input 1 950 ... 1434 MHz Input 2 1474 ... 1750 MHz Insertion loss Input 1 1.2 dB Input 2 1.4 dB Remote powering each input 300 mA /24 V		947 409-001	DS 2 Phase-out model	P. 66
	KWS 0922 F	Partial band coupler		to interconnect satellite signals. Used for CDS 7015 E, CDS 7032/.. CATV reception systems and the complete ASTRA CATV package FESAT-SET 850 E.	Frequency range Input 1 950 ... 1441 MHz Input 2 1459 ... 2050 MHz Insertion loss Input 1 2.5dB Input 2 2.5 dB Remote powering each input 300 mA /24 V		947 464-001	new	
	KWS 0923 F	Partial band coupler		to interconnect satellite signals. Used for CDS 7015 F CATV reception system and the complete ASTRA CATV package FESAT-SET 850 E.	Frequency range Input 1 950 ... 1191 MHz Input 2 1209 ... 2050 MHz Insertion loss Input 1 2.5 dB Input 2 2.5 dB Remote powering each input 300 mA /24 V		947 465-001	new	
	BW 5	Fixing bracket					947 290-001	DS 2	P. 76

Type		Designation	Application	Technical data	Order No.	Catalogue	Page
Passive distributors Relays Power supplies Tap-offs Distributors Power sockets	CKR 2100 F	Coaxial relay	to reduce from 2-cable to 1-cable systems. The relay can be controlled independently of each other via 14/18 V (coaxial cable) or 0/12 V (control line). Power supply can be optionally programmed to one input or to both inputs. Used for off-centre antenna systems or for satellite reception with two antennas.	Frequency range Input isolation 1/2 Optional switching voltage – Coaxial cable – ext. switching voltage +5.9 V ± 0.3 V Switching threshold 30 mA at 14 V Permitted load per input Ports	947 468-001	new	
	CKR 2400 F	Coaxial relay (Multiswitcher)	to reduce from 2-cable to 1-cable systems. Two inputs (horizontal and vertical), for outputs for four users. Switchover is individual by each user by 14/18 V over coaxial cable.	Frequency range Input isolation Output isolation Optional switching voltage Coaxial cable Switching threshold (variable) Current consumption Permitted load per input Ports	947 462-001	new	
	LES 1706	Line equalizer	to plug into output IF amplifiers	Frequency range Attenuation	947 379-001	DS 2	P. 104
	LES 2006	Line equalizer	to plug into output IF amplifiers	Frequency range Attenuation	947 489-001	new	
 	ARS 1319	Single tap-off	with directional coupler IEC ports	Frequency range Insertion loss Tap-off attenuation Directional attenuation	947 332-001	DS 2 Phase-out model	P. 80
	ARS 1429	2-way tap-off	with directional coupler IEC ports	Frequency range Insertion loss Tap-off attenuation Directional attenuation	947 331-001	DS 2 Phase-out model	P. 80
	ARS 0912 A	Single tap-off 10 dB	with directional coupler connectable terminals	Frequency range Insertion loss Tap-off attenuation Directional attenuation	947 472-001	new 3rd quarter 92	
	ARS 1412 A	Single tap-off 14 dB	with directional coupler connectable terminals	Frequency range Insertion loss Tap-off attenuation Directional attenuation	947 473-001	new 3rd quarter 92	
	ARS 2012 A	Single tap-off 20 dB	with directional coupler connectable terminals	Frequency range Insertion loss Tap-off attenuation Directional attenuation	947 474-001	new 3rd quarter 92	
	ARS 1024 A	2-way tap-off 10 dB	with directional coupler connectable terminals	Frequency range Insertion loss Tap-off attenuation Directional attenuation Coupling attenuation	947 475-001	new 3rd quarter 92	

Type		Designation	Application	Technical data		Order No.	Catalogue Page
Passive distributors							
Tap-offs							
Distributors							
Power sockets							
	ARS 1424 A	2-way tap-off 14 dB	with directional coupler connectable terminals	Frequency range Insertion loss Tap-off attenuation Directional attenuation Coupling attenuation	950 ... 2050 MHz 3.8 ... 5.8 dB 13 ... 14 dB 22/18 dB 32/28 dB	947 476-001	new 3rd quarter 92
	ARS 2024 A	2-way tap-off 20 dB	with directional coupler connectable terminals	Frequency range Insertion loss Tap-off attenuation Directional attenuation Coupling attenuation	950 ... 2050 MHz 3.8 ... 5.8 dB 20 dB 26/22 dB 36/32 dB	947 477-001	new 3rd quarter 92
	ARS 1034 A	3-way tap-off 10 dB	with directional coupler connectable terminals	Frequency range Insertion loss Tap-off attenuation Directional attenuation Coupling attenuation	950 ... 2050 MHz 8.4 ... 12.4 dB 9.5 ... 12.5 10 ... 18.5 dB 22dB 32dB	947 478-001	new 3rd quarter 92
	ARS 1044 A	4-way tap-off 10 dB	with directional coupler connectable terminals	Frequency range Insertion loss Tap-off attenuation Directional attenuation Coupling attenuation	950 ... 2050 MHz 11 ... 16 dB 10 ... 23 dB 22 dB 32 dB	947 481-001	new 3rd quarter 92
	VEDO 0422 A	2-way distributor	connectable terminals	Frequency range Distribution attenuation Coupling attenuation	950 ... 2050 MHz 5.0 / 5.8 dB 24 / 20 dB	947 469-001	new 3rd quarter 92
	VEDO 0529	2-way distributor	IEC ports	Frequency range Distribution attenuation Coupling attenuation	950 ... 2050 MHz 4.5/5.8 dB 22 dB	947 486-001	Phase-out model
	VEDO 0632 A	3-way distributor	connectable terminals	Frequency range Distribution attenuation Coupling attenuation	950 ... 2050 MHz 8.5 dB 22 dB	947 470-001	new 3rd quarter 92
	VEDO 0744 A	4-way distributor	connectable terminals	Frequency range Distribution attenuation Coupling attenuation	950 ... 2050 MHz 10 / 12 dB 22 / 18 dB	947 471-001	new 3rd quarter 92
	VEDO 0849	4-way distributor	IEC ports	Frequency range Distribution attenuation Coupling attenuation	950 ... 2050 MHz 10/11.2 dB 14 dB	947 487-001	Phase-out model
	VRZ 092 D	2-way distributor	IEC ports connectable to two BWS 2900 band couplers to feed in terrestrial signals.	Frequency range Distribution attenuation Coupling attenuation	0.15 ... 862 MHz 4 dB 24 ... 20 dB	962 764-002	DS 2 P. 82
	VZV 420	2-way distributor	IEC ports	Frequency range Distribution attenuation Coupling attenuation	0.15 ... 862 MHz 3.5 dB 20 dB	962 709-002	DS 2 P. 82
	EDU 2901 CL	Single socket	Output plug Output socket	Frequency range Connection attenuation	950 ... 2050 MHz 0.15 ... 862 MHz 1.0 / 1.5 dB	947 427-001	new
	EDU 2901 CR	Single socket	Output plug Output socket	Frequency range Connection attenuation	950 ... 2050 MHz 1.0 / 1.5 dB	947 428-001	new
	EDU 2901 FL	Single socket remote feeding	Output plug Output socket	Frequency range Connection attenuation	950 ... 2050 MHz 1.0 / 1.5 dB	947 448-001	new

Type	Designation	Application	Technical data		Order No.	Catalogue	Page
Passive distributors Tap-offs Distributors Power sockets	EDU 2901 FR	Single socket remote-fed	40 ... 862 MHz	Frequency range Connection attenuation 0.5	947 449-001	new	
	EDU 2902 C	2 inputs, 2 outputs, equal priority	950 ... 2050 MHz	Frequency range Connection attenuation 0.3	947 429-001	new	
	GEDU 2914 CL	Output plug Output socket	950 ... 1750 MHz 0.15 ... 862 MHz	Frequency range Insertion loss Connection attenuation 13.5	947 425-001	new	
	GEDU 2914 CR	Output plug Output socket	0.15 ... 862 MHz 950 ... 1750 MHz	Frequency range Insertion loss Connection attenuation 13.5	947 426-001	new	
	AD 951	Cover plate	except EDU 2902 C	Size	910 947-001	DS 2	P. 98
	AD 952	Cover plate	for EDU 2902 C	Size	910 945-001	DS 2	P. 98
	AR 20	Surface-mounted frame	for surface mounting of Hirschmann antenna sockets.		910 382-001	DS 2	P. 99
	EWR 108	Plug-on coupler	to separate terrestrial radio and TV signals. Plugged onto output "socket" of EDU 2901 FL or GEDU 2914 CL.	Frequency range Insertion loss	947 375-001	DS 2	P. 72
	SZ 951	Central disk	except EDU 2902 C	Size	910 948-001	DS 2	P. 98
	SZ 952	Central disk	for EDU 2902 C	Size	910 946-001	DS 2	P. 98
Active distributors Amplifiers Power supplies	DSZ 2006	Amplifier	remote-fed	Frequency range Gain max. output level IMD 3rd order/2 channels IMD 2nd order Ports	944 702-001	new	
	DSZ 2405	Amplifier	remote-fed	Frequency range Gain max. output level IMD 3rd order/2 channels Ports	944 588-001	DS 2	P. 104 Phase-out model
	DSZ 2415	FI amplifier	locally fed for CATV systems. Amplifies SAT band, passive bypass for terrestrial band. 1 input, 1 output.	Frequency range Gain max. output level IMD 3rd order/2 channels Ports	944 631-001	DS 2	P. 104



Type	Designation	Application	Technical data		Order No.	Catalogue	Page
			Frequency range	Gain			
Active distributors Amplifiers Power supplies	DSZ 2425	FI amplifier locally fed for CATV systems. Amplifies SAT band, passive bypass for terrestrial band. 2 inputs, 2 outputs	Frequency range	0.15 ... 862	944 632-001	DS 2	P. 104
			Gain	-1			
			max. output level IMD 3rd order/2 channels Ports	113 dB μ V 4 x IEC			
	DNV 111 A	FI amplifier locally fed for CATV systems. Amplifies SAT band, passive bypass for terrestrial band. 1 input, 1 output.	Frequency range	0.15 ... 26/47 ... 862	944 696-001	new	
			Gain	-1			
			max. output level IMD 3rd order/2 chann. IMD 2nd order Ports	114 dB μ V 104 dB μ V 2 x IEC			
	DNV 111 F	FI amplifier remote-fed, for CATV systems. Amplifies terrestrial and SAT bands. 1 input, 1 output Power supply is part of scope of supply.	Frequency range	47 ... 862	944 697-001	new	
			Gain	16			
			max. output level IMD 3rd order/2 chann. IMD 2nd order Ports	114 dB μ V 103 dB μ V 2 x IEC			
	DNV 216 B	Power supply amplifier coupler remote-fed power supply with amplifier (SAT) an integrated band coupler for terrestrial signals. 2 inputs, 1 output.	Frequency range	0.15 ... 862	944 695-002	new	
			Gain	-1			
			max. output level IMD 3rd order/2 channels IMD 2nd order Ports Remote feeding current	107 dB μ V 98 dB μ V 3 x IEC 350 mA max.			
	DNW 201 A	Power supply coupler remote feeding unit with integrated band coupler. 2 inputs, 1 output.	Frequency range	0.15 ... 862	944 694-001	new	
			Insertion loss	1.5 dB			
			Ports Remote feeding current	3 x IEC 450 mA max.			
	DSF 1511	Power supply to supply SHF converters and SAT IF amplifiers with 15 V DC 1 input, 1 output.	Frequency range	950 ... 2050 MHz	944 600-001	DS 2	P. 106
			Insertion loss	0.5 dB			
			Ports Remote feeding current	2 x IEC 350 mA max.			
	DSF 1515	Power supply to supply SHF converters and SAT IF amplifiers with 15 V DC 1 input, 1 output.	Frequency range	950 ... 2050 MHz	944 635-001	DS 2	P. 106
			Insertion loss	0.5 dB			
			Ports Remote feeding current	2 x IEC 450 mA max.			
	DSF 1521	Power supply to supply SHF converters and SAT IF amplifiers with 15 V DC 2 inputs, 2 outputs.	Frequency range	950 ... 2050 MHz	944 599-001	DS 2	P. 106
			Insertion loss	0.5 ... 3 dB			
			Ports Remote feeding current	4 x IEC 2 x 350 mA max.			
	DSF 1525	Power supply to supply SHF converters and SAT IF amplifiers with 15 V DC 2 inputs, 2 outputs.	Frequency range	950 ... 2050 MHz	944 673-001	new	
			Insertion loss	0.5 ... 3 dB			
			Ports Remote feeding current	4 x IEC 2 x 450 mA max.			



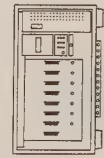
Type	Designation	Application	Technical data	Order No.	Catalogue	Page
CSW 2020 A	IF connecting cable	to connect SHF converters to indoor unit and KWS 0922 F/0923 F partial band couplers, receivers, etc. Pre-assembled waterproof F connector on UV-proof cable.	Frequency range Shielding rate Attenuation Cable length	913 593-001	DS 270	P 51
KA 3	Control cable for polarizer	for CSP 1210 C polarizers and CSC 8211 U SHF converters.	3 conductors 0.5 mm Dia. 5.3 mm	97 709-100	DS 270	P 51
KA 4 S	Control cable for motor spindles	to connect CSM 2800 B/4000 B/6000 B motor spindles to CSM 2000 B position controllers.	outer 4 conductors and ground 2 x 2 mm (Motor drive) 2 x 0.35 mm (Control signals) 1 x 0.35 mm (Ground) Dia. 7.8 mm	913 558-001	DS 2	P 152
KOKA 702	Coaxial cable	for indoor use	Attenuation 800 MHz 1750 MHz 2050 MHz	198 702- ...	DS 2	P 150
KOKA 712	Coaxial cable	for indoor use	Attenuation 800 MHz 1750 MHz 2050 MHz	198 712- ...	DS 2	P 150
KOKA 715	Coaxial cable	UV- proof	Attenuation 800 MHz 1750 MHz 2050 MHz	198 715- ...	DS 2	P 151
KOKA 741	Coaxial cable	Ground cable	Attenuation 800 MHz 1750 MHz 2050 MHz	198 741- ...	DS 2	P 151
KVS 1	Coaxial connector	to connect two coaxial sockets.	2-way connector	947 194-001	DS 2	P 134
FEKAB 751/150	Receiver connecting cable	to connect satellite receiver or a TV set.	Length 1.5 m	910 957-001	DS 2	P 100
FEKAB 751/300	Receiver connecting cable	to connect satellite receiver or a TV set.	Length 3 m	910 957-002	DS 2	P 100
KOK 9 N	Coaxial coupling	to connect RF coaxial cable.		932 658-317	DS 4	
KOS 9 N	Coaxial connector	to connect RF coaxial cable.		932 659-317	DS 4	
KOSWI 100	Coaxial right-angled connector	to connect RF coaxial cable.		931 436-001	DS 4	
BNCS 5962 A	BNC connector	to terminate connecting cables for units with BNC sockets.		947 441-001	DS 2	P 149
KVFC 01	Cable connectors F-Connector	to connect two RF cables each with an F connector.		947 374-001	DS 2	P 153
KVFC 02	Cable connectors F-Connector	to connect two RF cables each with an F connector.		947 387-001	DS 2	P 153
R 75	Terminating resistance	to terminate a main line with no return loss.		910 760-000	DS 2	P 98
RFC 75	Terminating resistance	to terminate open outputs with F connectors with no return loss.		947 373-001	DS 2	P 149



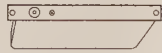
Type	Designation	Application	Technical data	Order No.	Catalogue	Page
Cable ties Connectors	SB 1	Adapter	to extend a coaxial connector	944 487-001	DS 2	P. 134
	SFC 052	F-Connector	Twist-on connector	947 389-001	DS 2	P. 148
	SFC 061	F-Connector	Twist-on connector	947 371-001	DS 2	P. 148
	SFC 070	F-Connector	Twist-on connector	947 388-001	DS 2	P. 148
	SFC 402	F-Connector	Clamp type connector	947 432-001	DS 270	P. 52
	RAUP 15			973 852-135	DS 410-Info	
	RAUP 15 SET			973 885-002	DS 410-Info	
	RAUP 29 SET			973 886-002	DS 410-Info	



Channel processing



CSS 3000 A	Basic unit incl. power supply and programmer	for max. 8 channel modules with integrated input and output patch panels. Compatible with adjacent channel operation.	Input frequency range Remote feeding for SHF converter Input patch panel Insertion loss IF bandwidth Video polarity Sound carrier frequency range Output level Power consumption Permitted ambient temperature Weight	950 ... 1750 MHz 15V/800mA 4- and 8- way 4-way -> 9.5 dB 8-way -> 14 dB 16/24 MHz switchover positive/negative switchover 5.00 ... 9.99 MHz 75 ... 90 dBµV adjustable ca. 70 W -20 to +50 C max. ca. 25 kg	new
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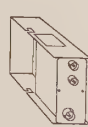
CUM 3016 A	Channel processing module	digital radio	Conversion	1st SAT IF -> 118 MHz	960 643-001	new
CKM 3910 A	Channel processing module	TV channel	Conversion	1st SAT IF -> Band I C2 - C4	960 641-001	new
CKM 3930 A	Channel processing module	TV channel	Conversion	1st SAT IF -> Band III C5 - C12, S8 -S20	960 640-001	new
CKM 3931 A	Channel processing module	TV channel OIRT	Conversion	1st SAT IF -> OIRT Band III R6 - R12	960 642-001	new

CDN 3800 A	Retrofit kit	to connect decoder	Submin D socket	Audio In Video In Baseband Out	960 656-001	new
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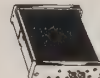
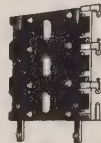
CMU 4000 A	19" channel module	TV channel can operate with adjacent channel	Conversion	Video/ -> Band III Audio C5 - C12, S8 -S20	960 540-001	DS 2
CMU 4400 A	19" plug-in unit with power supply 1U	for max. 4 CMU modules,	Power consumption	max. 20 W	960 487-001	DS 2

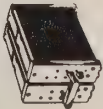
CSD 4100 A	19" AV processing module	Polarity switchover, e.g. to receive 4 GHz	Demodulator	Baseband -> Video/Audio	960 622-001	new
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CSK 4000 A	19" channel processing module	TV channel Main sound carrier	Conversion	1st SAT IF -> Video/Audio	960 484-001	DS 2
CSK 4001 A	19" channel processing module	TV channel for external sound processing	Conversion	1st SAT IF -> Baseband	960 498-001	DS 2

Type	Designation	Application	Technical data	Order No.	Catalogue	Page
Channel processing	CSK 4002 A	19"-Channel processing module	Conversion Sound carrier frequency	960 624-... 702 720 738 756 774 792	new	
			1st SAT IF -> Video/Audio 7.02 MHz -> 7.20 MHz -> 7.38 MHz -> 7.56 MHz -> 7.74 MHz -> 7.92 MHz ->			
	CSK 4400 A	19" plug-in unit with power supply	Power consumption	960 485-001	DS 2	P. 108
	CSV 4161 A	19" distributor, 6-way, active	Frequency range Gain Output level	960 482-001	DS 2	P. 108
	CSV 4261 A	19" distributor, 2 x 6-way, active	Frequency range Gain Output level	960 483-001	DS 2	P. 108
	LGP 3	Base plate	to mount power supplies, amplifiers and frequency converters of TOP programme.	944 011-000	DS 2	P. 137
	LMO 116 A	TV-Modulator Mono	to remodulate satellite TV programmes and modulate internal TV programmes in standard IF.	961 039-101	DS 270	P. 62
	LMO 216 A	TV-Modulator Stereo	to remodulate satellite TV programmes and modulate internal TV programmes in standard IF.	961 054-001	DS 270	P. 63
	LNE 701	Power supply	to supply amplifiers and frequency converters of TOP programme.	944 023-000	DS 2	P. 137
	LNE 1501	Power supply	to supply amplifiers and frequency converters of TOP programme.	944 018-001	DS 2	P. 137
	SFN 061	IF selectivity filter	for additional selectivity for adjacent channel mode. Used together with LZE... and LZA... frequency converters	961 391-...	DS 230	P. 41

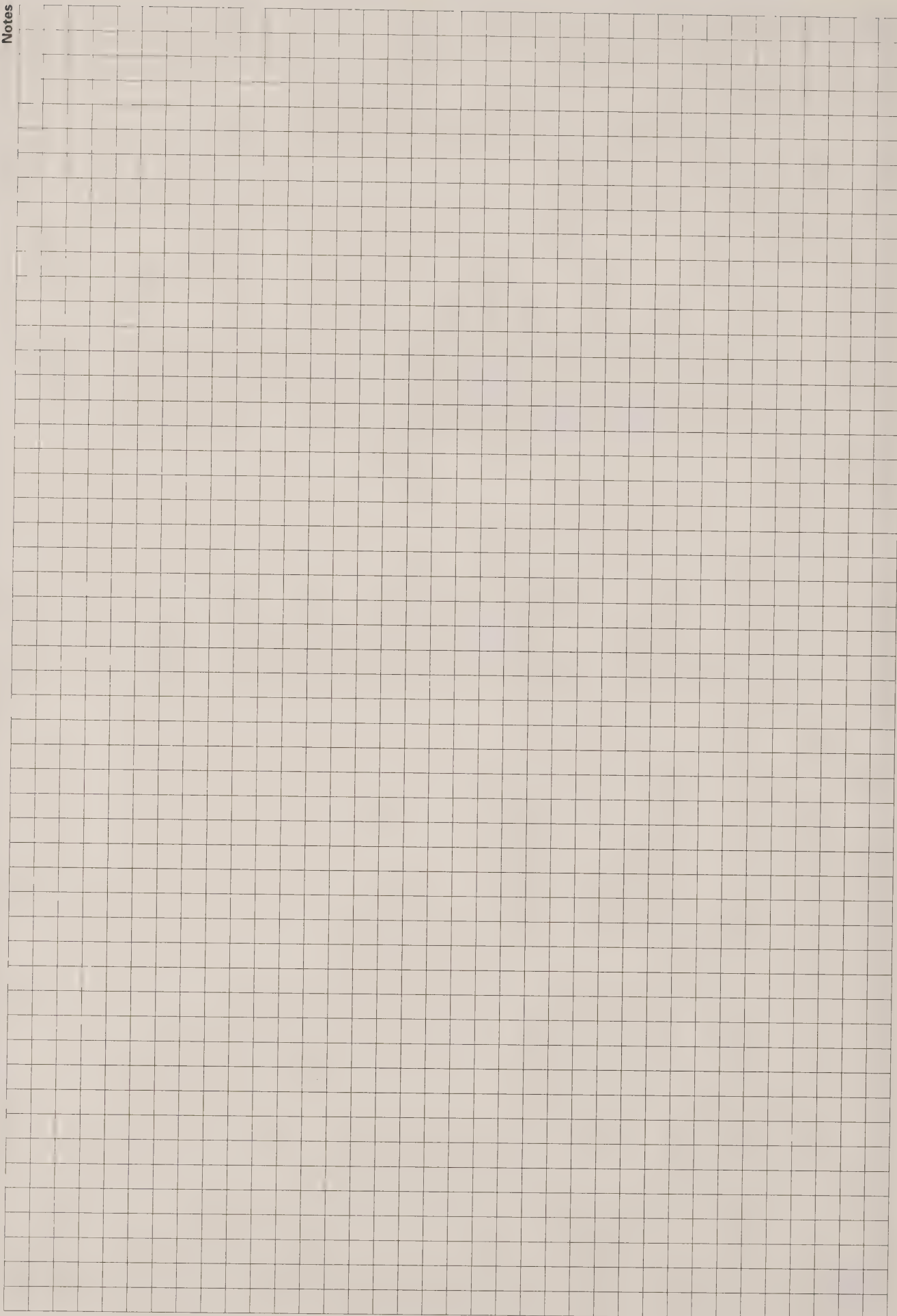


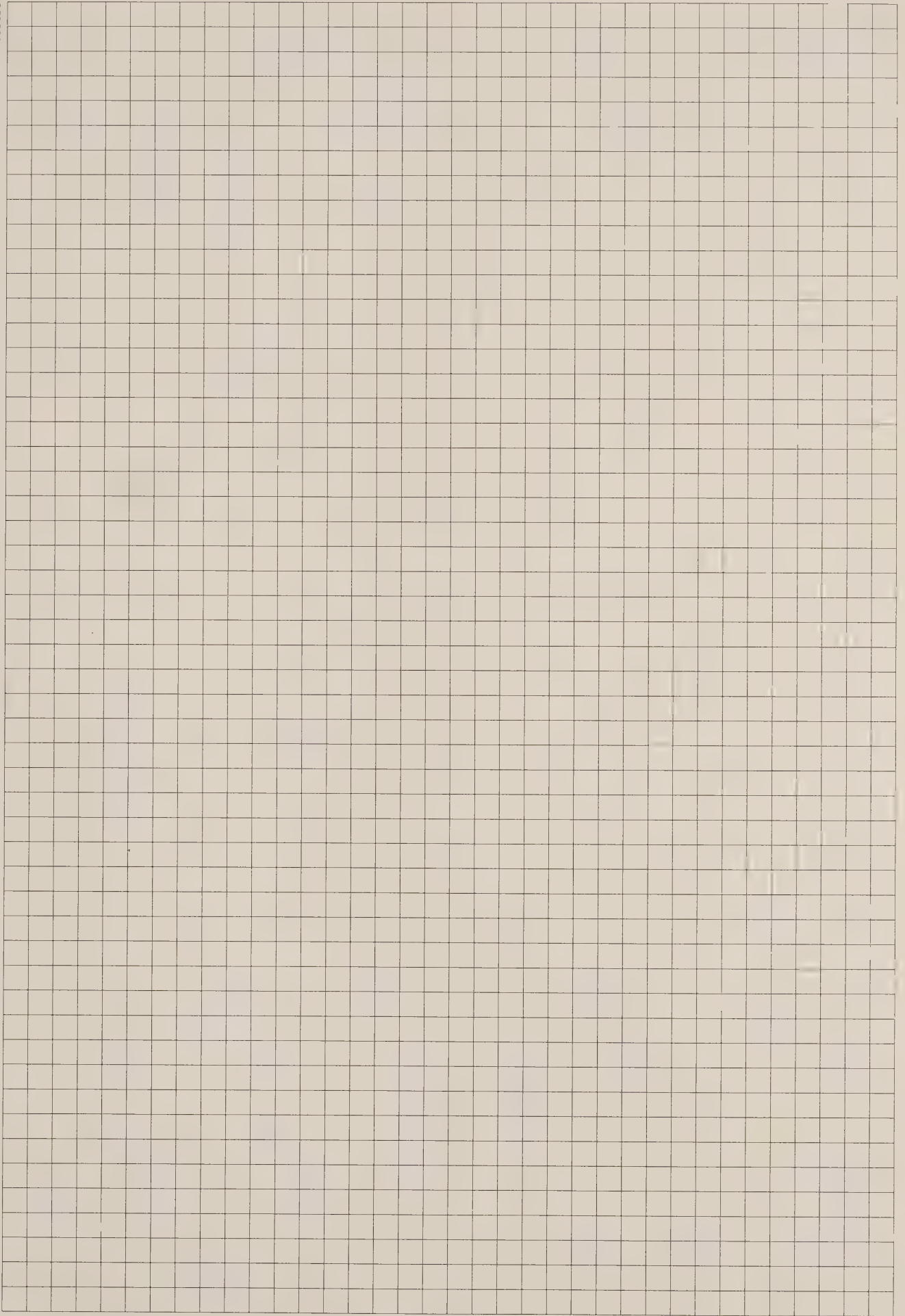
Channel processing		Type	Designation	Application	Technical data		Order No.	Catalogue	Page
		LZA 261 K..	Output converter	IF in B I			948 282- ...	DS 2	P. 143
		LZA 263 K..	Output converter	IF in B III			948 281- ...	DS 2	P. 143
		LZA 264 K..	Output converter	IF in B IV/V			948 292- ...	DS 2	P. 143
		LZA 267 KS..	Output converter	IF in LSB			948 283- ...	DS 2	P. 143
		LZA 268 KS..	Output converter	IF in USB			948 284- ...	DS 2	P. 143
		LW 77	Terminating resistor	to terminate an unused output of a main line.			944 681-001	DS 2 new	
Receiver Positioners		CSR 300 B	SAT TV receiver	for individual and CATV systems in mono-cable systems in frequency range from 950 - 2050 MHz.	Input frequency Memory channels Input X/Y Input level 2nd IF bandwidth FM threshold Video Frequency Output level Frequency deviation Outputs Baseband Frequency Output level Frequency deviation Deemphasis Video polarities Output Audio Frequency Frequency bandwidth Deemphasis VF frequency Output level Outputs UHF modulator Output/input UHF output Output level Standard Test pattern generator Miscellaneous Remote feeding voltage Remote feeding current Power source Polarizer control Size Weight Decoder connection	950 ... 1750 MHz 99 F-Connector (socket) 75 Ω 49 ... 79 dBμV 26 MHz 6 dB typ. at 16 MHz deviation 20 ... 5 MHz 1 V _{pp} across 75 Ω 25/16 MHz/V programmable EURO-AV, Chinch 20 ... 10 MHz 1 V _{pp} across 75 Ω 25/16 MHz/V CCIR 405, 625 lines linear programmable positive Chinch 5.0 ... 8.8 MHz 150 kHz 50 μs 20 ... 15 kHz 1 V _{pp} EURO-AV, 2 x Chinch (R/L) IEC plug/socket C 36 (30 ... 39) 75 dBμV across 75 Ω PAL B/G yes 14/18 V, can be switched off, short-circuit proof 400mA 230 V ~ +6%, -10%/ 50-60 Hz magnetic 6.5 x 38 x 29 cm 2 kg yes	913 794-002	new	

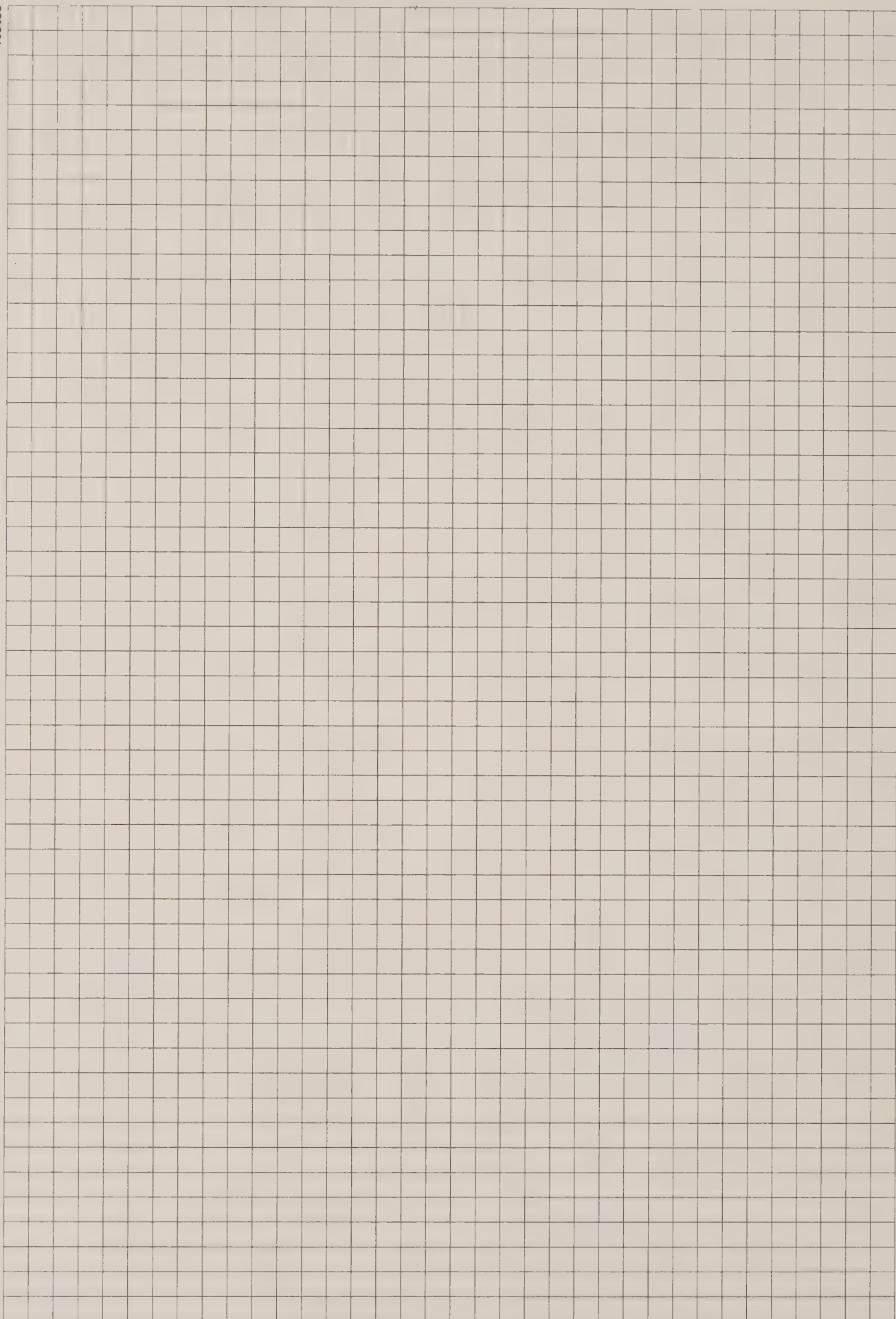


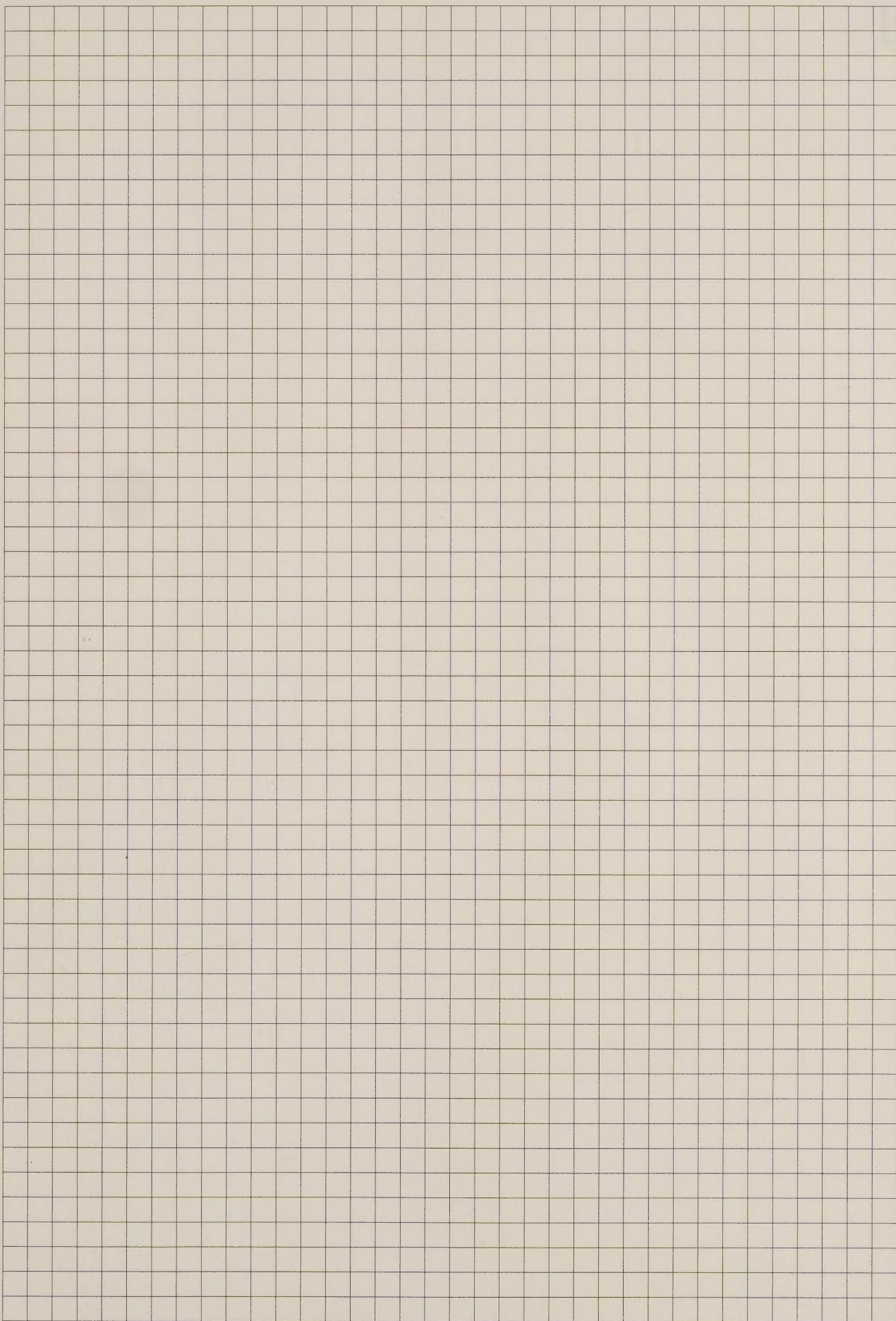
Type	Designation	Application	Technical data	Order No.	Catalogue	Page
Receiver Positioners	CSR 2200 A	SAT TV receiver for individual and CATV systems in mono-cable and 2-cable systems in frequency range of 950 - 1750 MHz.	Input frequency Memory channels Input XY Input level 2nd IF bandwidth Video Frequency Output level Frequency deviation Outputs Baseband Frequency Output level Deemphasis Video polarities Outputs Audio Frequency Frequency bandwidth Deemphasis VF frequency Output level Outputs UHF modulator Output/input UHF output Output level Standard Test pattern generator Miscellaneous Remote feeding voltage Remote feeding current Power source Polarizer control Control voltage Size Weight	950 ... 1750 MHz 99 2x F-Connector (socket)/75 Ω 49 ... 89 dBμV 24 MHz 20 ... 5 MHz 1 V _{pp} across 75 Ω 25/16 MHz/V programmable EURO-AV, Chinch 20 ... 10 MHz 1 V _{pp} across 75 Ω PAL/linear programmable positive Chinch 5.8 ... 8.28 MHz 130/280 kHz 62 μs, J17 20 ... 15 kHz 0.5 V across >1 kΩ EURO-AV, 2 x Chinch (R/L) IEC plug/socket C 38 (30 ... 39) 70 dBμV across 75Ω PAL B/G-I yes 14/18 V, can be switched off 2 x 250mA 200 ... 260 V~/50 Hz mech./mag./electr. 0/12 V 4.5 x 37 x 17 cm 2 kg	913 807-001 new	
	CSM 2000 B	Antenna positioner Programmable controller for 49 SAT positions. To align a parabolic reflector in conjunction with a polar mount and a CSM... motor spindle.	Inputs Outputs Mains Size Weight	Sensor pulses Motor op. vtlg. Sensor op. vtlg. low ≤3.0 V high ≥4.5 V 36 V ± 20 % 5 V / 200 mA 12 V / 300 mA 220 V ~ ±10% 7 x 32 x 28 cm 4.2 kg	913 626-001 DS 270	P. 57
	DSR 2000 B	D2-MAC-TV-Receiver to receive D2-MAC signals, e.g. from ASTRA, TV-SAT, TDF etc.	Input frequency Memory channels Size Weight	950 ... 1750 MHz 99 7x 32 x 28 cm 3.5 kg	913 672-001 DS 270 (Phase-out model)	P. 56
	RC 200	Remote control to remote-control CSM 2000 B position controller in conjunction with satellite receiver.			913 636-001 DS 270	P. 57

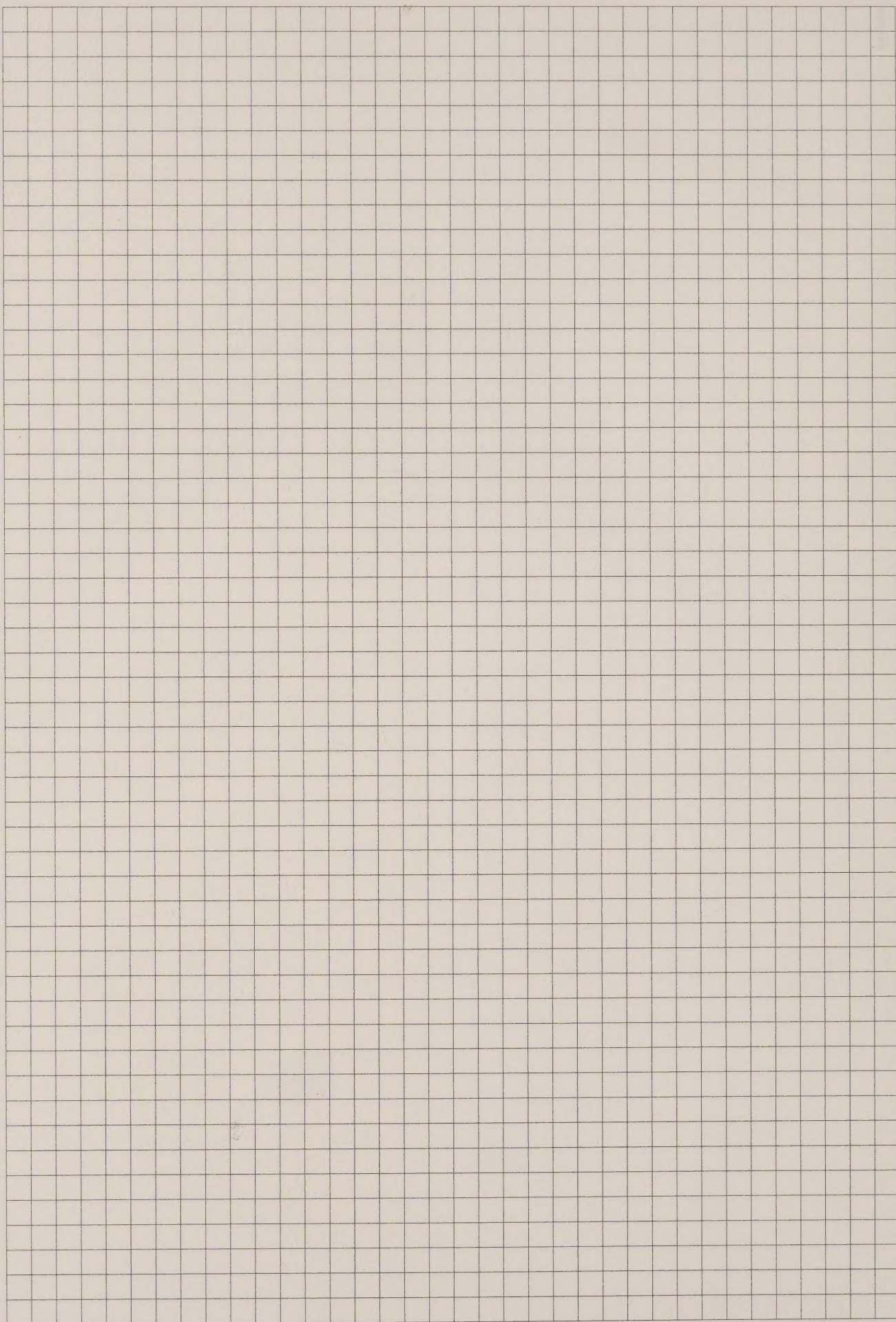
Type		Designation	Application	Technical data		Order No.	Catalogue	Page
Measuring instruments	N/F connector set					913 522-001	DS 2 DS 270 Phase-out model	P. 56 P. 65
		N/SMA connector set				913 523-001	DS 2 DS 270 Phase-out model	P. 56 P. 65
	Inclinometer	Inclinometer, variable				913 524-001	DS 2 DS 270	P. 56 P. 65
	Precis. bearing compass	Azimuth compass				913 525-001	DS 2 DS 270	P. 56 P. 65
	SPM 900	Satellite level meter	to measure satellite signals in 1st IF and to align parabolic antennas.	Frequency range Level range Accuracy Power supply Size Weight incl. battery	950 ... 1750 MHz absolute: 40 ... 80 dB μ V relative 0 ... 20 dB \pm 3 dB only with integrated rechargeable battery (not in scope of supply) 265 x 200 x 185 mm 1.8 kg	913 513-002	DS 2 DS 270	P. 156 P. 65
	SPM 1000	Satellite level meter	to measure satellite signals in 1st IF and to align parabolic antennas. Selective measurement by input of required frequency or channel.	Frequency range Level range Measurement options Accuracy Power supply Size Weight incl. battery	950 ... 1750 MHz ¹⁾ absolute: 50 ... 80 dB μ V selective or sweep \pm 3 dB Power source 230 VAC or with integrated battery (not in scope of supply) 265 x 200 x 240 mm 2.5 kg	948 367-001	new	
					¹⁾ from mid-1992 frequency range 590 - 2050 MHz			











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